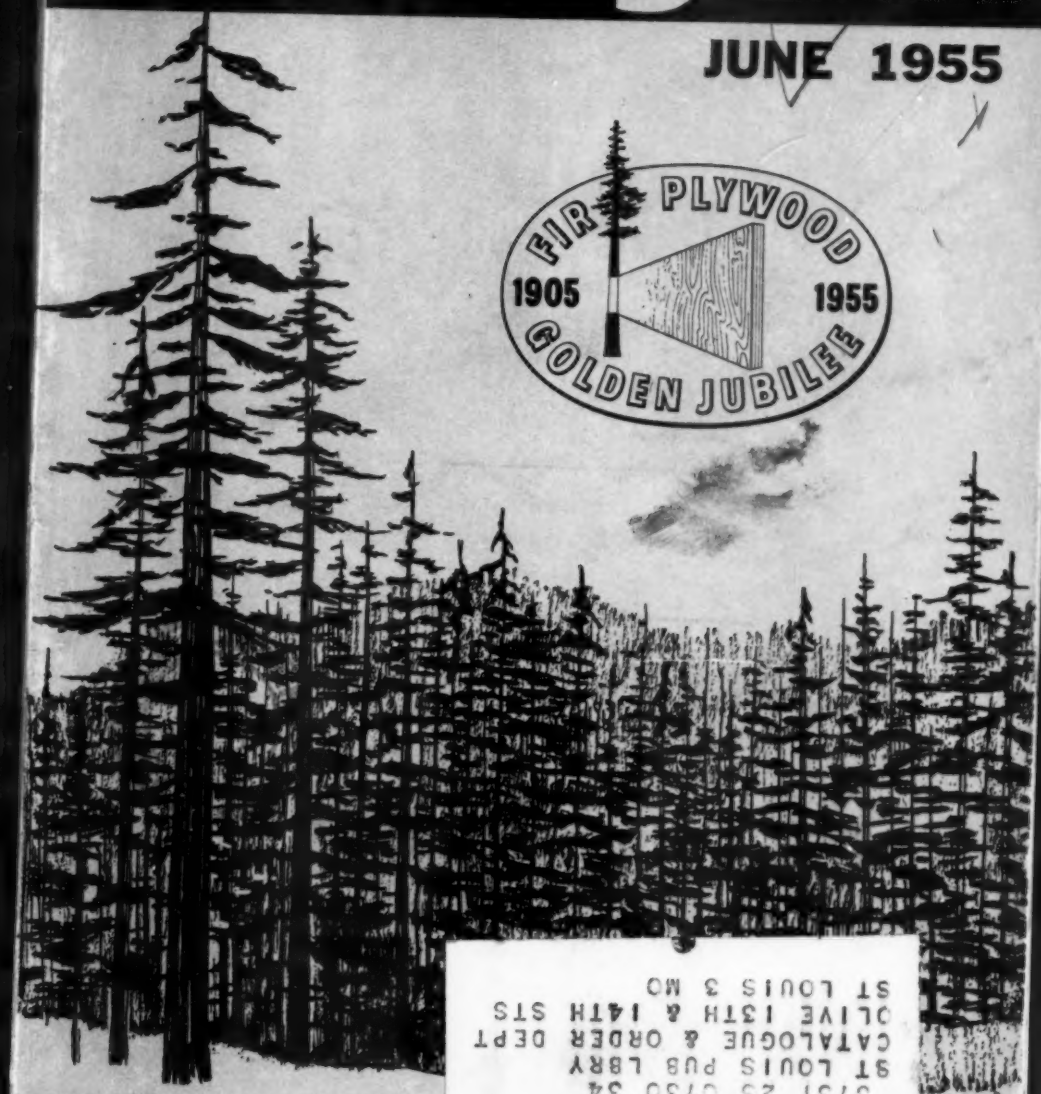
WOOD WORKING Digest

JUNE 1955



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OLIVE 13TH & 14TH STS
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A HITCHCOCK PUBLICATION

DRIVE STANDARD I[illegible] ROU[illegible]

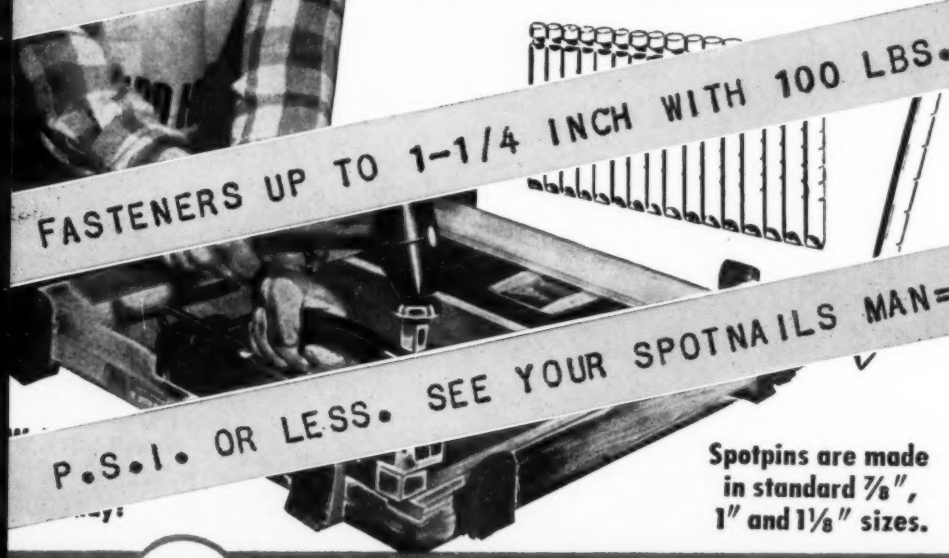
NEW PORTABLE AIR DRIVE SPOTNAILERS AND [illegible]MATICALLY!

[illegible]ne dependable, production-tested Spotpinner auto[illegible] matically drives—and countersinks [illegible] familiar round 12 gauge [illegible] millwork [illegible]

SPOTPINNERS EMPLOY NEW HIGH VELOCITY PNEUMATIC PRINCIPLE. DRIVE ALL SPOTNAILS FASTENERS UP TO 1-1/4 INCH WITH 100 LBS. P.S.I. OR LESS. SEE YOUR SPOTNAILS MAN=

The new Spotpinner has a double capacity magazine contained entirely within its virtually indestructible molded frame.

Spotpi[illegible] [illegible]—chiselpointed [illegible]g check rails and muntins. [illegible]otpins are round, straight (no offset) and cohered in sticks for quick magazine loading.

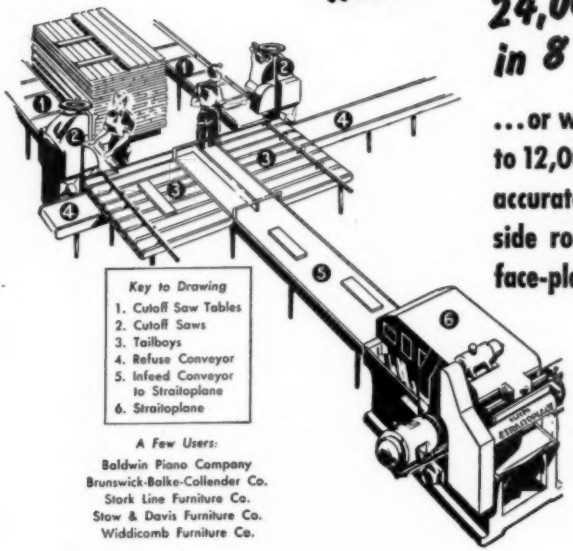


Spotpins are made in standard ⅞", 1" and 1⅛" sizes.

SPOTNAILS, INC EVANSTON 1, ILL.

"OLIVER" CONVEYORIZED ROUGH MILL

with 3 men can process 24,000 ft. of lumber in 8 hours



Key to Drawing

1. Cutoff Saw Tables
2. Cutoff Saws
3. Tailboys
4. Refuse Conveyor
5. Infeed Conveyor to Straitoplane
6. Straitoplane

A Few Users:

Baldwin Piano Company
Brunswick-Balke-Collender Co.
Stork Line Furniture Co.
Stow & Davis Furniture Co.
Widdicomb Furniture Co.

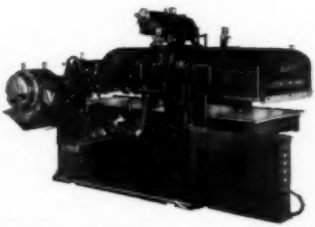
...or with 2 men from 6,000 ft. to 12,000 ft. in one day. Stock is accurately sawed to length, one side rough surfaced, other side face-planed to correct dimension

• Using an "Oliver" conveyorized layout, two men running two Cutoff Saws and one man to tend the Straitoplane can turn out up to 24,000 ft. a day. With one man at a Cutoff Saw, up to 12,000 ft. a day.

• This system is most efficient for processing rough lumber from bunk through surfacer. It gives flat, uniform stock. Cuts manpower, speeds production. Avoids unpiling and repiling on trucks.

• The "Oliver" layout can be changed to meet your special needs. If you produce 4,000 ft. or more a day, get all the facts on this Conveyorized Rough Mill system.

"Oliver" automatic Cutoff Saw makes up to 43 cuts a minute. Hydraulic operated. Has wide capacity. Makes cuts without .005 inch variation.

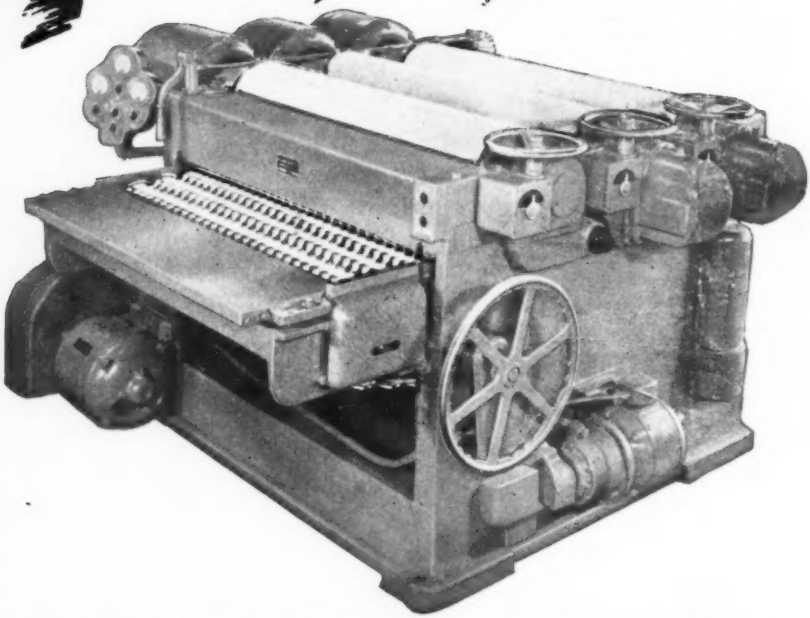


Straitoplane removes warp or wind from stock, rough surfaces one side, face-planes other in one operation. Takes stock to 36" wide, ½" to 6" thick, from 16" up in length. Feed: 20' to 60' or more a minute. Processed stock is straight, flat, uniform.

OLIVER MACHINERY COMPANY, GRAND RAPIDS 2, MICHIGAN

THE SMITH ENDLESS BED SANDER

WITH SELF-OSCILLATING DRUMS AND VARIABLE SPEED DRIVE, 12' TO 35' PER MINUTE



For more than 107 years, **THE H. B. SMITH MACHINE CO.** has been **OUTSTANDING** in producing the **BEST** in Woodworking Machinery.

The **SMITH** 2, 3 and 4 Drum Endless Bed Sanders are recognized as the **BEST** Sanders thruout the world.

This has been true since the **FIRST** Endless Bed Drum Sander to be introduced to the Woodworking Industry was originated over sixty years ago by the **H. B. SMITH MACHINE CO.**

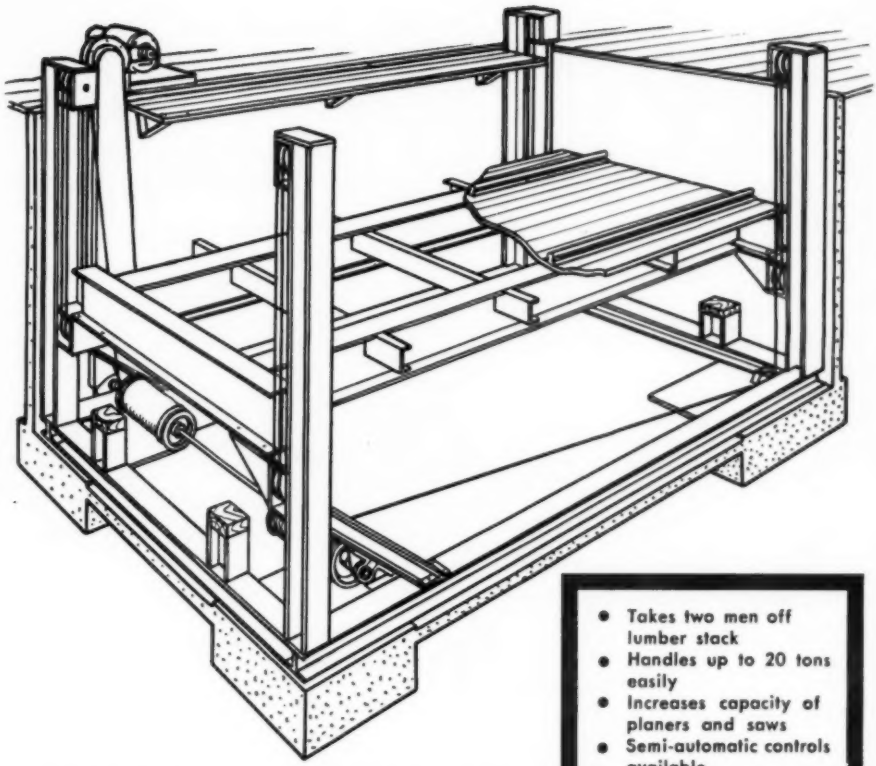
If you want **HIGH QUALITY** coupled with **QUANTITY PRODUCTION,** if you want **EXTRAORDINARY LONG LIFE,** if you want the **LOWEST MAINTENANCE COST,** you want the best . . . you want the **SMITH** Endless Bed Drum Sander.

Write for Descriptive literature.
AND
Ask about our Lease Arrangement.

H. B. SMITH MACHINE CO.

SMITHVILLE

BURLINGTON COUNTY **NEW JERSEY**



- Takes two men off lumber stack
- Handles up to 20 tons easily
- Increases capacity of planers and saws
- Semi-automatic controls available
- Floor level drive gives easy access . . . less danger from water seepage in pit
- Engineered and installed by experts in materials handling for the Woodworking industry

INCREASE PRODUCTION! LOWER LABOR COSTS!!

Woodworking plants throughout the nation are getting new materials handling economy and top production efficiency with the Walters Lumber Lift.

TYPICAL INSTALLATIONS

Art Furniture Co., Macon, Ga.
Kewaunee Mfg. Co., Adrian, Mich.
Prestige Chair Co., Newton, N. C.

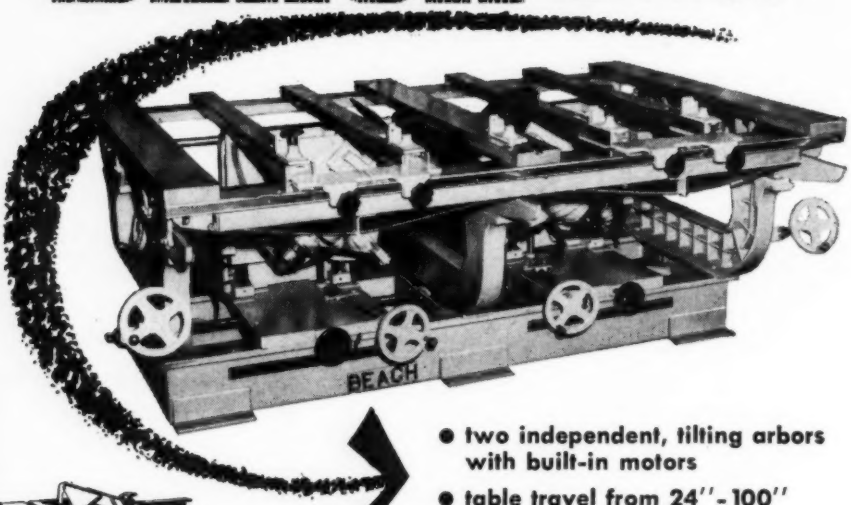
WALTERS MFG. CO. SINCE 1927 MORRISTOWN TENNESSEE

WALTERS MFG. CO.
Dept. DW - 934 E. Main Street
Morristown, Tennessee

Please send full details on the Lumber Lift.

COMPANY NAME .....
ADDRESS .....
CITY ..... STATE .....
BY ..... TITLE .....

SPECIFY BEACH DOUBLE CUT-OFF SAW



- **two independent, tilting arbors with built-in motors**
- **table travel from 24''-100''**

TILTING TABLE SAW

Where high precision woodworking operations are necessary, specify BEACH DOUBLE CUT-OFF SAWS. Tilting arbors make it possible to: 1) cut 2 mitres, 2) cut square at one end and mitre the other, 3) square both ends in one operation, 4) cut a compound mitre with 1 saw.

CARRIAGE mounted on ANTI-FRICTION ROLLERS for greatest accuracy of movement

END ROLLS and tracks have flat surfaces

SLIDING TABLES may be secured in any desired position with a single hand screw

ARBORS are independent units with ball-bearing, 5 H.P. motor mounted on mandrel. Each arbor tilts to 45° with 6'' independent vertical adjustment

MANDREL SPEED 3600 R.P.M.

WRITE TODAY!
for complete information and specifications on the Beach Double Cut-Off Saw.

BEACH
MANUFACTURING CO.
MONTROSE, PA.

WOOD WORKING Digest

JUNE, 1955
Vol. 57, No. 6

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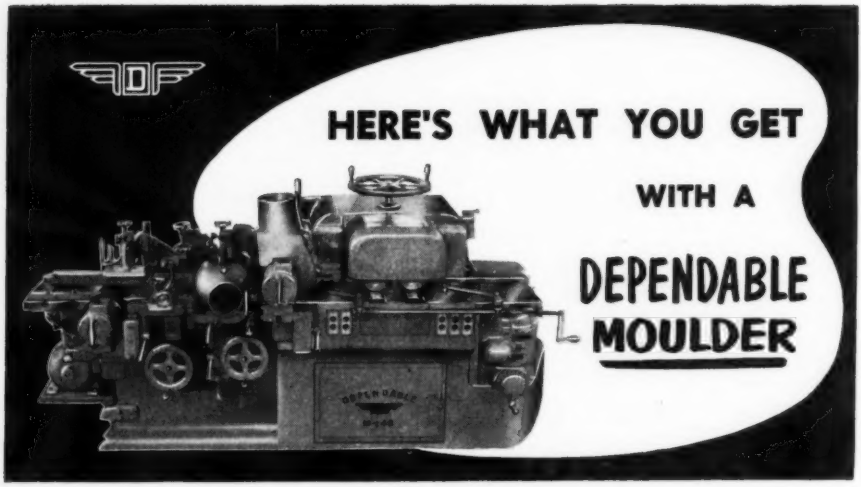


★ FINER FINISHES
★ HIGHER PRODUCTION

It's a hard combination to beat—and you get both with Dependable's Electro Unit Drive Moulder.

Dependable Moulders are designed for high speed production. Rate of feed is from 20-150 FPM with U. S. Varidrive. Variable, high spindle speeds (up to 6,000 RPM) are obtained **without frequency changer.** Spindle speeds can be adjusted independently of one another. Standard operating speed is 5,000 RPM.

And because of higher spindle speeds, you get finer finishes with fewer knives. Production costs are cut because you have less knives to buy, grind and maintain. On a Dependable Moulder, **four knife heads do the work of six.**

These features combined with the versatile Removable Cartridge Spindle Unit, make the Dependable Moulder the best buy on the market today. Moulders are available in 4, 6, 8 and 10 inch models. All models have large maximum cutting circles, heavy cast iron construction and 100% ball and roller bearings. Call or write for full information or ask for Bulletin C-12.

DEPENDABLE BUILDS:

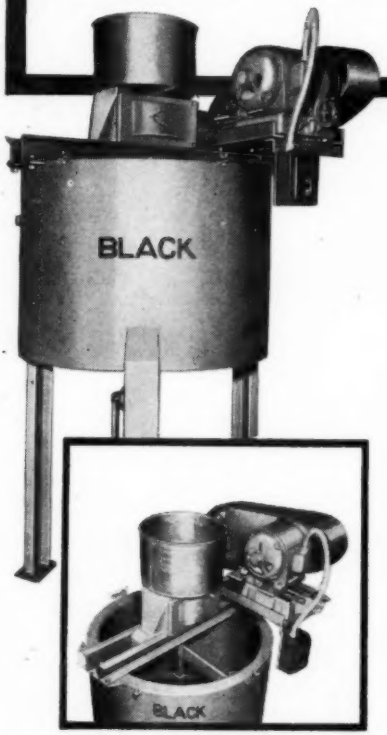
Gang Rip Saws	Saw Grinders
Knife Jointers	Blower Fans
Knife Grinders	Knives
Knife Balancers	Moulders
Head Grinders	Cutter Heads

Dependable
MACHINE COMPANY, INC.
GREENSBORO, NORTH CAROLINA, U. S. A.

THE BLACK BROTHERS

Cold Glue Mixers

FOR POWDERED OR LIQUID ADHESIVES

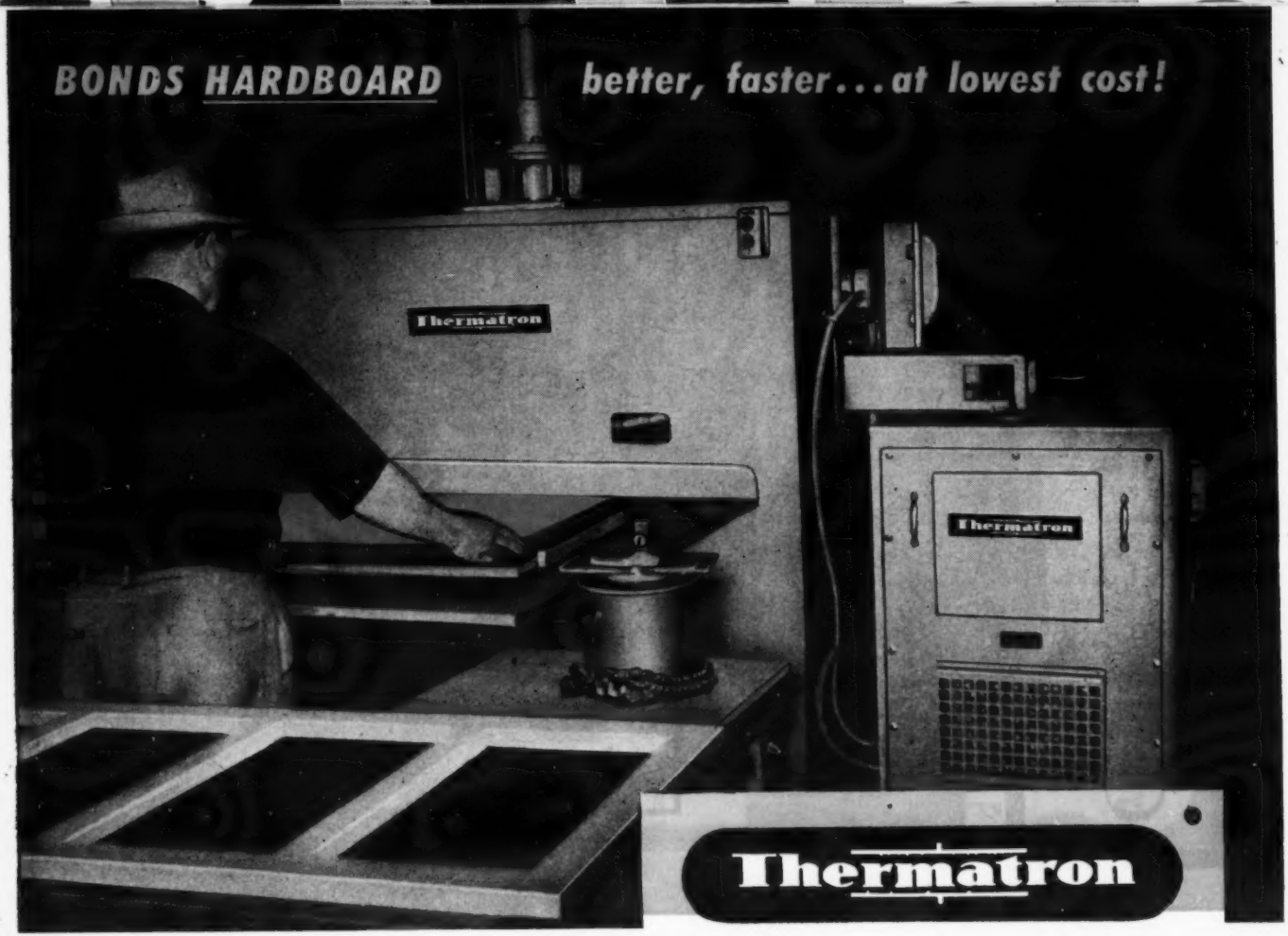


The Black Brothers stationary cold glue mixers are made in a full range of capacities from 10 to 500 gallons. They are the result of expert engineering combined with years of practical experience in glue equipment manufacturing. Their many features include: (1) Sifter for glue powder (2) *Double agitators which give a beating action resulting in the smoothest possible mixture in the least possible time* . . . see close-up on left (3) Pressure lubrication (4) Cut steel gears . . . hardened and lapped (5) Large quick-acting valve at bottom. Optional equipment includes (1) water jacket (2) variable speed drive. For full information write today for Bulletin 11-1.

The Black Brothers portable motor driven cold glue mixer is made in 2, 5, 7½, and 15 gallon sizes. It has a number of exclusive Black Brothers features such as glue powder sifter, two-way agitation, and specially shaped flat paddles to give a beating action to the agitator. In addition this mixer has a hinged arm that swings up to allow the pail to be inserted or removed. Write for Supplement to Bulletin 11-1.

"If it Is Gluing Equipment—We Have It"

THE BLACK BROTHERS CO., INC., Mendota, Illinois



ELECTRONIC GENERATORS AND EQUIPMENT

Tempered hardboard can be successfully bonded with THERMATRON electronic generators and hydraulic presses—combining the best, fastest and most inexpensive method of gluing with the best and cheapest wood-material on the market today! The variety of products is practically limitless with new uses being discovered daily . . . from radio and TV cabinets, furniture and displays *to houses and even vehicles!*

If you're fabricating tempered hardboard or planning to do so let us show how the THERMATRON way of bonding can benefit your production. We'll offer suggestions and application engineering without obligation. Write us today for complete details and ask us for our instructive bulletin no. WD47.

IN RADIO AND ELECTRONICS SINCE 1922

Thermatron *Division*

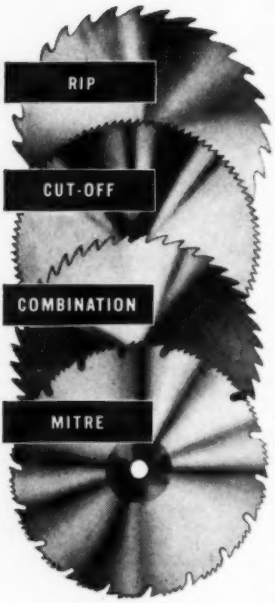
RADIO RECEPTOR COMPANY, INC.

SALES DEPARTMENT: 251 WEST 19th STREET, NEW YORK 11, WAtkins 4-3633

Chicago Sales: 2753 West North Avenue *Factories in Brooklyn, N.Y.*

YOUR TYPE—YOUR SIZE—YOUR SPEED

Specify Silver Steel®



CALL YOUR ATKINS DISTRIBUTOR

Fast, complete saw service is as near as your phone. Depend on Atkins *Silver Steel* for all cutting, shaping, trimming, planing—and for cutting costs.

SOLID TOOTH CIRCULAR SAWS—Flat or Hollow Ground

Ask for Atkins solid tooth circular saws . . . to save time on every cut . . . to save money on every blade . . . to get the kind of accuracy that cuts your finishing work. Whatever your woodworking requirements, depend on Atkins for the right saw.

A-2 RIP—Cuts fast and doesn't wobble. Holds a keen cutting edge—stays longer on the job.

A-8 CUT-OFF—For smooth cutting across the grain at maximum speed. Long-lasting edge stands up under heaviest use.

A-44 COMBINATION—Flat ground, rips or crosscuts equally well, fast, true. Holds cutting edge.

A-37-H HOLLOW GROUND MITRE—Rips, crosscuts or mitres smoothly. Saws fast without heating up—requires fewer sharpenings.

SILVER STEEL NARROW BANDSAWS—Uniform high quality; properly heat-treated to meet the demand for tough bandsaw blades with teeth that stay sharp.

SILVER STEEL MACHINE KNIVES—Accurate, precision cuts, fast cuts, for a longer time. Perfectly balanced knives packaged in sets.

SILVER STEEL SMOOTH-END TRIMMERS—Fast sawing, clean cutting—maximum clearance. For power or hand feed, green or dry lumber.

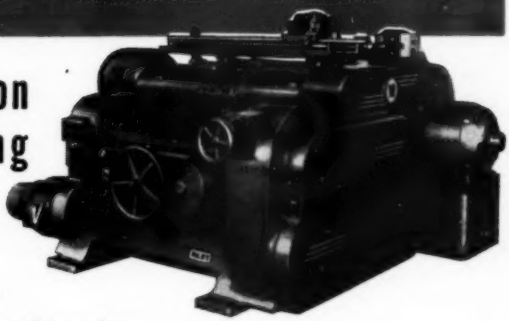
BW **ATKINS**

ATKINS SAW DIVISION • BORG-WARNER CORPORATION
INDIANAPOLIS 9, INDIANA

ATKINS Silver Steel SAWS

Nothing Compares with the WHITNEY 97 DOUBLE SURFACER

For quality production and low cost planing



Whitney 97 Double Surfacer
Feeds: 30 to 90 feet per minute
Planes stock 1/16" to 7" thick
Widths, 30" 36" 40" and 44"

The Whitney 97 Double Surfacer, the last word in modern planer design, is built to handle your double surfacing requirements. Its rugged proportions and faster feeds permit it to handle easily the volume production required in today's modern plant. Traditional Whitney accuracy and careful workmanship assure smooth, accurate planing, continuous production, low cost maintenance and the stamina to produce best results under the severest kind of service.

The Whitney 97 will bring to your plant a new conception of production efficiency and cost savings. High production quotas will be maintained and sanding and finishing costs substantially reduced. Investigate today the Whitney 97 for your double surfacing requirements. Write for full particulars. Ask for planer bulletin D 1.

Check these features

- Wedge Construction
- Nitralloy Center Table
- Ball and Roller Bearings thruout
- Motor Raising and Lowering of Bed
- Built-in Variable Speed Feed
- Micro-feed Selector
- Automatic Power Feed Grinder

Planer Specialists
FOR MORE THAN 100 YEARS

In our 117th year

Baxter D. Whitney & Son, Inc.
WINCHENDON, MASSACHUSETTS, U. S. A.
Quality Built Woodworking Machinery Since 1837

PLANERS • SHAPERS • AUTOMATICS • VARIETY SAWS • BACK KNIFE LATHES

Shop Grade California REDWOOD

builds better Sash and Frames!

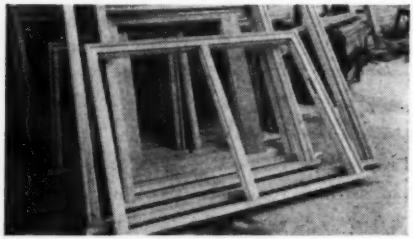
To the manufacturer of sash and frames, shop-grade California Redwood offers many distinct advantages in quality and economy over any other American commercial wood.

THESE DOOR FRAMES will give years of trouble-free service, thanks to Redwood's unique dimensional stability.

In one beautiful, workable package, Redwood combines high decay resistance, paint retention and insulation value with low volumetric shrinkage and expansion. And all the lengths required for sashes and frames can be cut from low-cost shop-grade Redwood.

For more detailed information about Redwood, write the California Redwood Association, 576 Sacramento Street, San Francisco 11.

This Association includes sixteen of the nation's leading producers of Redwood lumber: Simpson Redwood Co., Union Lumber Co., Warm Springs Redwood Co., Willits Redwood Products Co., Wolf Creek Timber Co., Inc., Arcata Redwood Co., Eureka Redwood Lumber Co., Hammond Lumber Co., Hollow Tree Redwood Co., Holmes Eureka Lumber Co., Hulbert & Muffly Lumber Mill, M & M Wood Working Co., Northern Redwood Lumber Co., The Pacific Coast Co., The Pacific Lumber Co., Rockport Redwood Co.



SASHLESS WINDOW FRAMES of Redwood add beauty, keep air leakage at minimum.

DOUBLE-HUNG Redwood window frame won't warp or twist, will hold paint or stain finish for years.

Professional Woodworking Tools by "YANKEE" and STANLEY

For Good Measure . . . Zig-Zag or Pull-Push

New Stanley Zig-Zag Extension Rule. Extra thick first leg has brass slide for inside measurements. Rule opens to even numbers – marking gauge at 2", 4", 6", 8", etc. *6 ft. No. X246 Extension Rule – $2.10.*

New Extra Wide Stanley Pull-Push Rule. ¾" wide, extra rigid, extra long – 10 ft. blade unreels from compact 2" case to make out-of-reach measurements easy. *10 ft. No. 3610W Rule – $2.39.*

For Good Screw Driving . . . Start to Finish

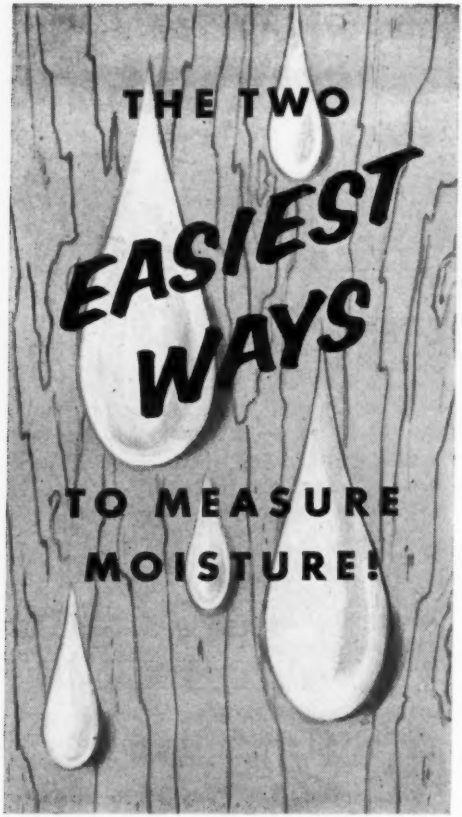
New Stanley Screw Mate Combination Wood Drill and Countersinks. 3 boring jobs at once! Pilot hole, shank hole and countersink in one operation with hand drill, power drill or drill press *and* Screw Mates. 24 sizes from ½" x No. 5 to 2½" x No. 12. Tool steel – correctly heat treated. *No. 1525 Screw Mate – 75¢.*

Finish the job to perfection with the famous "Yankee" Spiral Ratchet Screw Driver. A real time and work saver. This fine tool does the job – a push is all you put behind it. The ratchet drives or draws and the handle returns automatically after each stroke. *"Yankee" No. 130A Spiral Ratchet Screw Driver – $7.70.*

See, try and buy these professional tools at your hardware store. Write Stanley Tools, 796 Elm St., New Britain, Conn. for free tool catalog.

STANLEY Tools "YANKEE"®

The Stanley Works • Tools • Electric Tools • Hardware • Steel • Steel Strapping

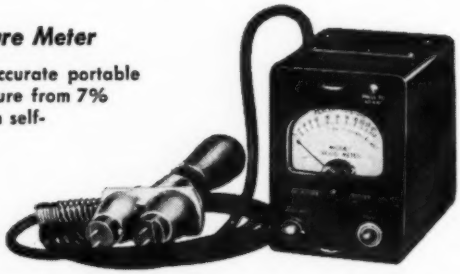


WESTON *ALL-PURPOSE*
MOISTURONIC
Moisture Meter

Here is the most versatile moisture meter, yet the simplest and easiest to read. Measures up to 150% moisture on the double-range scale (readings above 30% for comparative purposes). Utilizing the precise resistance principle, it has the same dependability typical of all WESTON instruments. Available in both battery and A-C types, with a sturdy carrying strap. Weight less than 10 lbs. Send for bulletin W7B.

WESTON *Midget Moisture Meter*

The smallest, most convenient and accurate portable meter. Instantly indicates wood moisture from 7% to 30%. Weight less than 4 lbs. with self-contained batteries. Unequalled for quick, portable use—checking lumber, lath, shingles, plaster walls, plywood, etc. Send for bulletin W2C.



WESTON *Moisture Meters*

WESTON Electrical Instrument Corporation, 614 Frelinghuysen Ave., Newark 5, N. J.

Laminated arches...PENACOLITE®-Bonded

provide strength, safe construction, weather resistance in ultra-modern Florida school buildings

Cocoa High School Auditorium, Cocoa, Florida
Architects: Griffin and Gomon, Daytona Beach, Florida
Contractor: Edward M. Fleming, Miami

The beautiful new auditorium and gymnasium at the Cocoa High School in Cocoa, Florida, are good examples of how laminated wooden structural members are being used in modern buildings. The arches and beams in these two school buildings were designed and manufactured by Unit Structures, Inc., of Peshtigo, Wisconsin, and were laminated with "Penacolite" Adhesives, made by Koppers.

These arches give great structural strength without excessive weight. A completely functional design was possible in these buildings because large areas could be spanned (96′ in the auditorium, 128′ in the gym) without sacrificing any of the valuable floor space for supporting posts . . . the base of each arch is *outside* the building.

All the laminating was done with "Penacolite" Adhesives because they form bonds as strong as the wood itself – bonds that can be counted upon to *maintain* their strength despite age, exposure to water and weather, stress and strain, or temperature extremes.

"Penacolite" Adhesives are easy to use too. They cure quickly—in a few hours at room temperature, or in just a few minutes at higher temperatures. For all the facts on "Penacolite" Adhesives and their many uses, write to Koppers for free, illustrated literature.

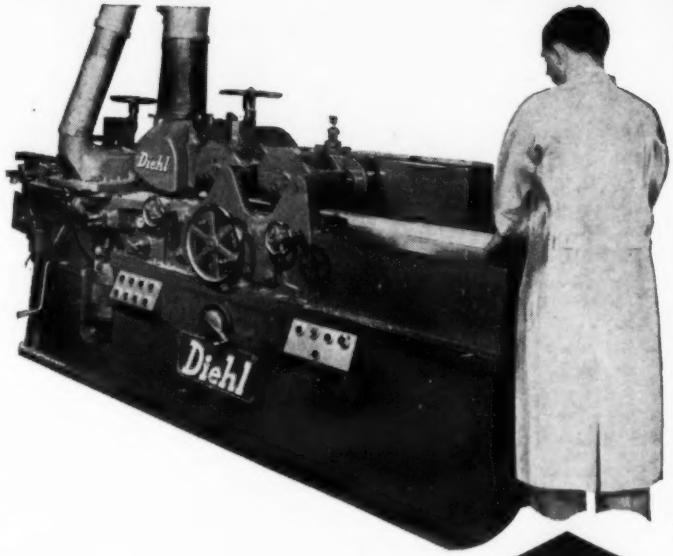
KOPPERS COMPANY, INC.

Chemical Division, Dept. WD-65, Koppers Bldg., Pittsburgh 19, Pennsylvania

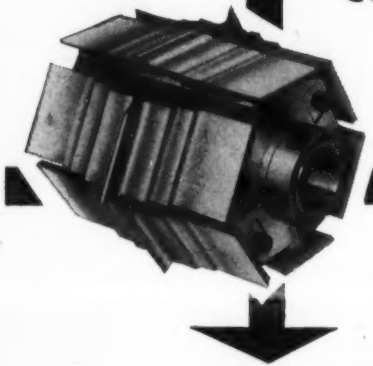
PENACOLITE® RESORCINOL ADHESIVES

The original waterproof, room-temperature-setting adhesives

New Diehl 8-Inch 4-Head Moulder.
Also available in 6-Inch Model.
Write for Bulletin No. M-155



Combine Diehl balanced Cutterheads with the new Diehl Moulder . . .



Diehl Cutterheads . . .
your best investment for *any* moulder or jointer equipment.
Write for Bulletin No. 452.

Diehl Cutterheads . . .
your best investment for *any* moulder or jointer equipment.
Write for Bulletin No. 452.

for balanced performance

An important fact . . . important to you in terms of plant output and plant profit: Diehl Cutterheads and Diehl Moulders are *designed together to work together.*

The advantages are obvious. From the design and engineering staffs of *one* company, you get a Cutterhead and Moulder combination built for *balanced performance.*

Diehl Cutterheads provide the truest, longest-wearing edges available. They are heat-treated by the latest methods. They are balanced to an absolute degree, both statically and dynamically. Their profiles are held to precision accuracy, through an optical comparator. And they are *available*—in either standard or custom design—with *expert* assistance from Diehl Cutterhead Specialists.

And for high-speed set-up and adjustment time, vibrationless operation, and permanent accuracy . . . the massive, streamlined, new Diehl Moulders are the standard of the woodworking industry.

For complete information on Diehl Cutterheads and the new Diehl Moulder, contact your Diehl Representative. He'll show you *why* this great combination has the *edge* in profitable production.

CUTTER DIVISION

Diehl

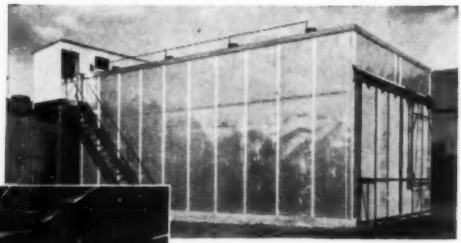
THE G. M. DIEHL MACHINE WORKS, INC.
Wabash, Indiana, U. S. A.

Standard of Comparison of the Woodworking Industry

NOW—You Can Cut Steam Radiation Losses 50%!

• Install STANDARD PREFABRICATED DRY KILNS! That's what the Toledo, Ohio plant of Jennison-Wright Corporation did recently. Their STANDARD PREFABRICATED DRY KILN . . . featuring cross-circulating, direct-driven fan units housed in a sturdily-constructed building of rust-proof aluminum panels . . . has a 2" side wall insulating core equivalent to the insulating value of 27" of common brick, and a 3" roof core equivalent to 41"! *Compared with a good masonry building, steam radiation losses are reduced 50% or more . . . resulting in tremendous fuel cost savings!*

• Decide now to cut steam radiation losses, and insure uniform drying of all your wood products. STANDARD PREFABRICATED DRY KILNS can be *completely* installed in any size—from a small research kiln to a large production unit—in only a few days!



This is an inside view of the kiln's operating room. It's located over the kiln at the discharge end. Notice **STANDARD'S** compact and easily-installed automatic control panel.

STANDARD PREFABRICATED DRY KILN installed at Jennison-Wright is 26' wide x 40' long x 18' high. It's of the end-piling type, and is designed for package loading. It requires little maintenance, and can be easily moved and re-erected at a different site whenever desired.

Write for free, illustrated Standard catalog

Engineers and Manufacturers Since 1887

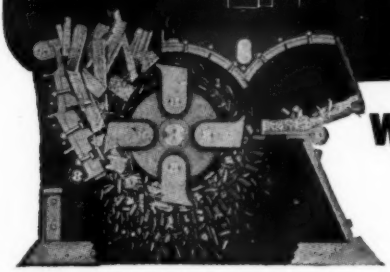
STANDARD DRY KILN COMPANY

P. O. BOX 5708 . . . INDIANAPOLIS 21, IND.

BRANCH OFFICE: REDMAN ENGINEERING SERVICE • HIGH POINT, N.C.

Get Better, Lower-Cost Fuel From Waste Wood!

Typical automatic installation in many plants. All wood scrap is conveyed to the hog; then chips are blown to fuel bin. In some installations, chips are blown to a stoker which feeds them into boiler or furnace; in other cases, chips are blown directly into fire box.



Cross section of "No-Nife" Hog showing how fast-moving chisel-edge hammer reduces wood by impact until properly sized to pass through grates in bottom of hog.

WILLIAMS "No-Nife" HOGS

When reduced to chips in a "No-Nife" Hog, wood scrap is 100% combustible—the cheapest of any fuel for producing heat and power. Money-wasting unhogged wood refuse won't burn evenly, restricts air flow, smothers the fire, causes excessive smoke and soot.

By hogging, handling costs are also reduced up to 75%. One man can handle as much tonnage in chip form as three men can handle in long lengths, awkward and odd-shaped pieces. In most installations, labor savings alone pays for a "No-Nife" Hog in a few months.

Write For Fact-Filled Brochure

Williams builds a complete line:
Hogs, Grinders & Shredders • Vibrating Screens • Air & Mechanical Separators
Heavy Duty Fans • Cyclone Collectors.

WILLIAMS PATENT CRUSHER & PULVERIZER CO.
808 ST. LOUIS AVENUE — St. Louis 6, Mo.

WILLIAMS
CRUSHERS GRINDERS SHREDDERS
OLDEST AND LARGEST MANUFACTURER OF HAMMER MILLS IN THE WORLD

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WOODS MOTORS are SUPERLATIVE in

★ DESIGN ★ MATERIALS ★ WORKMANSHIP ★ PERFORMANCE ★

★ **MOTORS**

★ **MOTOR ARBORS**

★ **SHAFTLESS MOTORS**

2 and 3 phase 1-100 horsepower

Type L Motor Saw Arbor

This popular unit is being widely used for cross-cutting, ripping or dadoing operations, modernizing belt-driven machines, etc. Built in three diameters, 3¼", 4", and 5⅛", center line to flatted top or either side, it is rated from 1 to 15 HP at 3600 RPM or higher ratings and speeds when operated from a frequency changer. Oversize ball bearings with arbors up to 2¼" diameter are mounted to eliminate end play, operation may be horizontal or vertical and either totally-enclosed dust proof or ventilated construction can be supplied.

Write today for descriptive material or ask our Engineering Department the solution for any special motive problem.

MOTOR DIVISION

S. A. WOODS MACHINE CO.

27 DAMRELL STREET

BOSTON 27, MASS.

walker-Turner

LIGHT-HEAVYWEIGHT MACHINE TOOLS

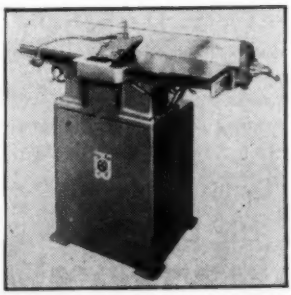
designed especially for light-heavyweight

WOODWORKING

Newly Designed LIGHT-HEAVYWEIGHT **10" TILTING ARBOR SAW** Sturdily Built for Lasting Accuracy

16" LIGHT-HEAVY-WEIGHT VARIABLE SPEED BAND SAW the Ideal Machine for Metal-working and Woodworking

The complete line of W-T LIGHT-HEAVYWEIGHTS includes



LIGHT-HEAVYWEIGHT—8" JOINTER

DRILL PRESSES . . . Hand and Power Feed • RADIAL DRILLS Wood and Metal Cutting BAND SAWS • TILTING ARBOR SAWS • RADIAL SAWS • JIG SAWS • LATHES • SPINDLE SHAPERS • JOINTERS • BELT AND DISC SURFACERS • FLEXIBLE SHAFT MACHINES

Call your nearby W-T distributor listed under "TOOLS" in your Telephone Directory

WALKER-TURNER
• DIVISION •
KEARNEY AND TRECKER CORPORATION
PLAINFIELD, N. J.

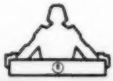
It's never too wet for Presdwood!

Douse it. Dunk it. Submerge it for years*. Masonite Tempered Presdwood® resists water indefinitely. Water won't dilute its advantages.

Unlike the wood from which it comes, Presdwood has no grain or knots to plague the production man. Never rots or corrodes, splits or cracks. Never deteriorates under severest climatic conditions—finishes stay new looking longer.

This stubborn stability is just one of the many reasons why Presdwood panels are so welcome a component in products. Too, they combine with wood, metal, plastics, fabrics—cutting production costs, increasing quality. At present there are 44 types and thicknesses of Presdwood products ready to serve you. For the aid of a Masonite sales engineer, write Masonite® Corporation, Dept. WWD-6, Box 777, Chicago 90, Ill.

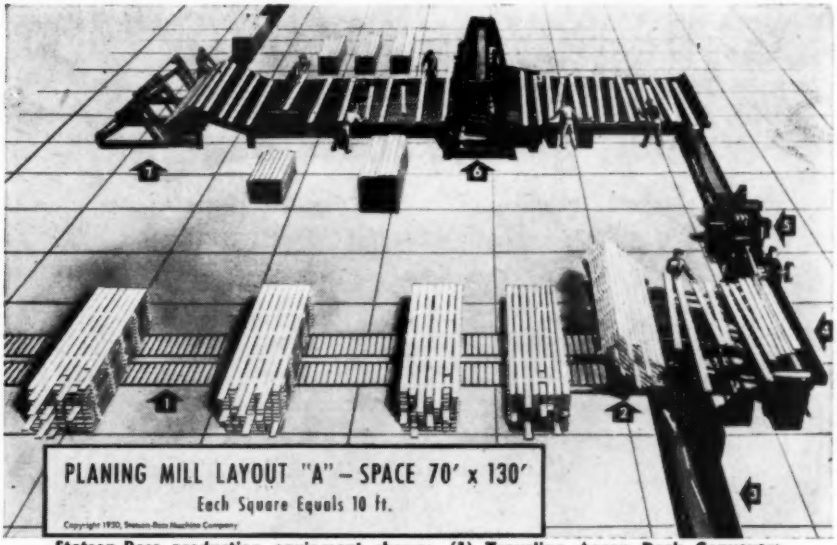
*Thousands of square feet of Masonite Tempered Presdwood went into a "sea wall" along Chicago's lake front. After nine icy winters and steaming summers, the panels showed no discernible change in size or shape.

Choose This Man  He Makes The Difference

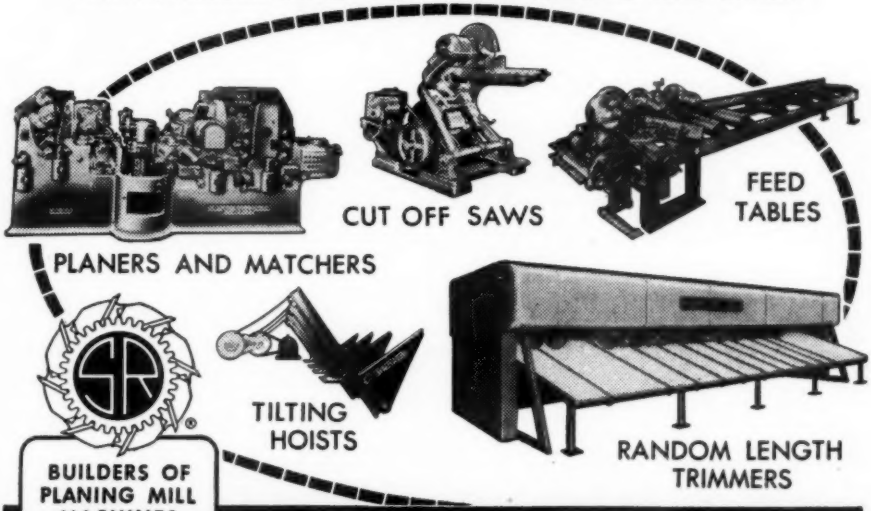
MASONITE CORPORATION

MANUFACTURERS OF PRESDWOOD PANEL PRODUCTS

A COMPLETE LINE OF PLANING MILL MACHINES . . .



Stetson-Ross production equipment shown: (1) Traveling Apron Deck Conveyor; (2) 603E Tilting Unloader Hoist; (3) Sticker and Bunk Removal Conveyor; (4) 511E Feed Table; (5) 6-10-A1 Planer, Matcher, and Double Profiler; (6) T-30 Selectively Automatic Random Length Trimmer; (7) 603 RE Tilting Reloader.

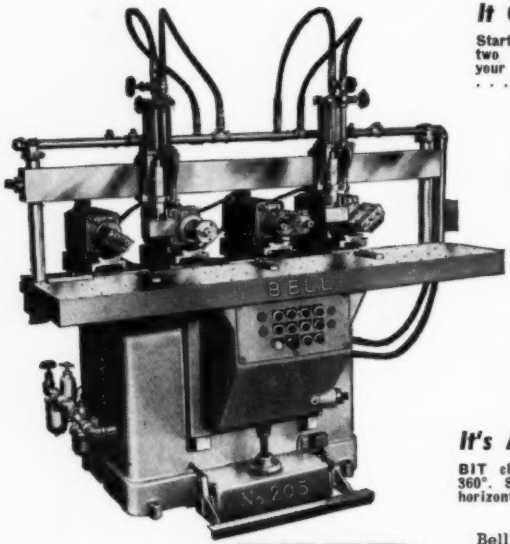


BUILDERS OF PLANING MILL MACHINES SINCE 1907

STETSON–ROSS MACHINE COMPANY
SEATTLE 4, WASHINGTON

Are you paying for a "205"

—without getting these benefits?



It Can Grow!

Start with one or two heads. Add as your needs require . . . up to 14 heads.

It's Flexible!

Table raises 6 inches—speeds set-ups. Will handle your 1,001 boring jobs.

It's Fast!

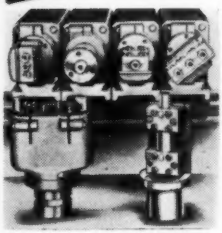
Set it for automatic cycling, or manual operation—one cycle and stop.

It's Accurate!

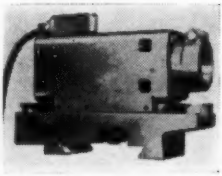
Boring depth is adjustable. (7" maximum.) Stroke is by smooth air power.

It's Adaptable!

BIT clusters rotate, through 360°. Same cluster can bore horizontal or vertical pattern.



You have a wide choice of spindle clusters, both standard and special. Each one fits any motor unit on the "205." Units have one to six boring spindles arranged in line or staggered patterns. Each rotates 360°, giving FULL flexibility in set-ups.



In each compact boring head a 1½-H.P. motor delivers power directly to boring bit, with no lost power through unnecessary linkage! 2 H.P. available for extra-tough jobs.) Smooth air power moves all heads into the work. Speed and depth of stroke can be regulated.

Bell's new Electric-Pneumatic BORING MACHINE will *pay for itself* in labor saving, in increased production, and in accuracy of work (shortening time in assembly)! As a single-purpose machine in large plants you can't beat its efficiency . . . and yet it is just as ideally suited to general-purpose boring. The "205" can replace an entire group of smaller, less flexible machines.

If present inefficient methods are eating up the cost of a "205", why not change over—and start to enjoy *savings!*

For complete information, write to

Bell

MACHINE COMPANY

71 Jackson Drive

Oshkosh, Wisconsin

SPEED with the POWER PLANER

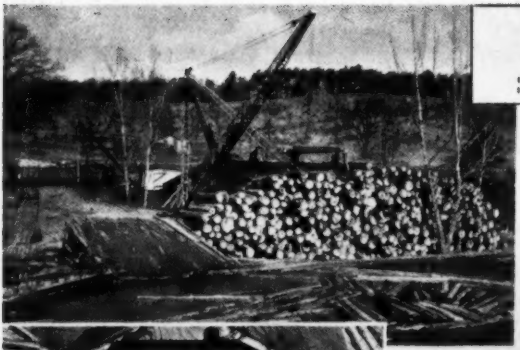
No. 380
and 380A
PLANER

FLEXIBLE CONTROL OF SPEED is only one of the many features that places the POWER Planer far and ahead the most desired planer in the industry. For a very good reason experienced woodworkers prefer POWER Planers for the more particular and exacting jobs. For eighty six years, thousands of Planers have been produced of all types: roll feed, endless bed feeds, single, double and four side machines, dimension planers, deck planers etc. There is no substitute for experience in the development of precision Planers. Write today for full information on this latest Model POWER Planer.

HIGHEST QUALITY SINCE 1867

Planers - Tenoners - Planers & Matchers
Resaws - Band Saws - Power Feed Rip Saws

L. POWER & CO.
2823 Oakford St.
Philadelphia, Pa.
Manufacturers of POWER Machinery Since 1867



DEPENDABILITY
ASSURES *Your* PROFITS

the wood you want, when you want it, in the quantities you want, through your Atlantic Man.

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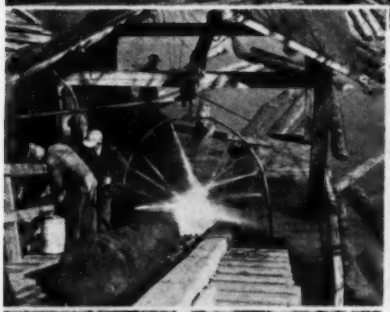
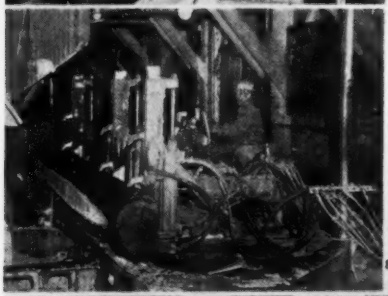
Headquarters for HARDWOODS

RESOURCES for YOU....





At Knoxville, Tennessee, our logs are unloaded from cars by crane and deposited in the log pond. The logs are then given a bath before entering the saw mill. Clean logs are always a real asset to the sawyer as he converts them into lumber.

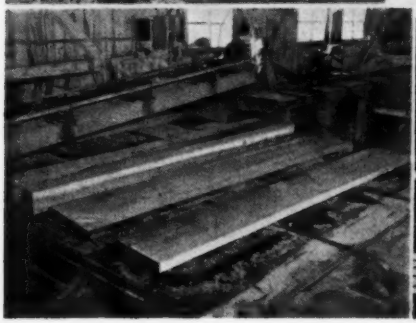
Note the beautiful soft Yellow Poplar pictured below, and a "bird's-eye" view of the inventory on our Columbia, South Carolina, mill yard.

These are a few of the scenes of men, machines and operations that keep your Headquarters for Hardwoods geared always to your immediate needs.

Ask your Atlantic Man about others. Watch for them here and in your Atlantic Log, published monthly.

THE ATLANTIC LUMBER CO.

88 BROAD ST., BOSTON 4, MASS. 1055 SENECA ST., BUFFALO 10, N. Y.



HOTTEST THING
ON THE MARKET!

WHELAND NO. 55 AUTOMATIC ELECTRIC SHIFT

TRIMMER

guaranteed accurate to within .156 inch

WHELAND

Right Hand Automatic Electric Shift Trimmer. (Left Hand Models also available.) Standard Models trim in multiples of 2 feet. Can be furnished to trim in multiples of 1 foot on special order. (Also furnished for one man manual operation.)

PUSH THE BUTTON—THE TRIMMER SHIFTS ITSELF
AS EASY TO OPERATE AS YOUR RADIO

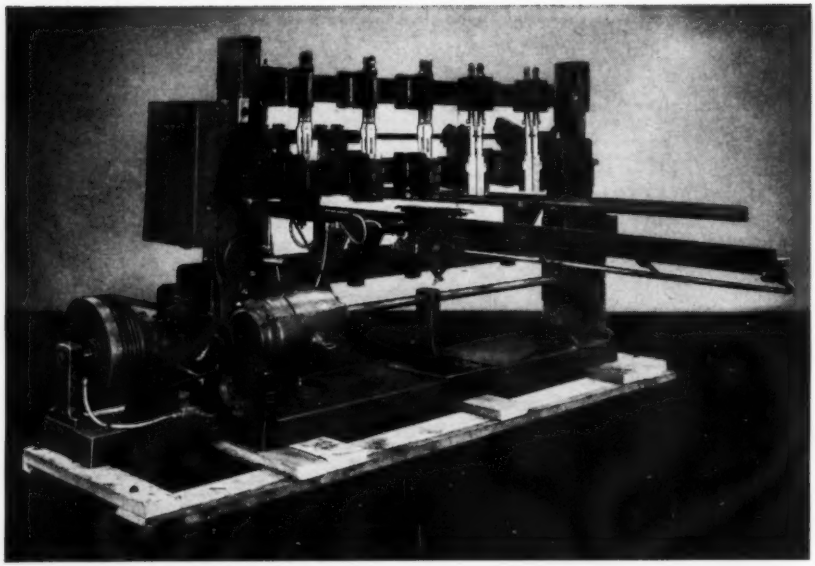
● Far More Accurate Than Any Mechanical Shift Involving The Human Element ● Sturdy ● All Iron and Steel Construction ● Ball Bearings On All Shafts ● Saws Quickly and Easily Shifted.

Write For Bulletin

THE WHELAND COMPANY

CHATTANOOGA, TENNESSEE — PHONE 5-3181

MANUFACTURERS OF COMPLETE SAWMILLS AND AUXILIARY MACHINERY



diagonal slat crates are best when *Stapled* on SARANAC

Saranac STAPLED crates give their contents real protection that keeps customer complaints at a minimum. STAPLING gives crates extra strength—the two legs of a single staple, driven through crating material and then clinched will hold twice as well as a clinched nail. The top span of the staple securely holds even very thin material that nail heads frequently pull through . . . permits use of lighter material without sacrificing strength, cuts both material and shipping costs.

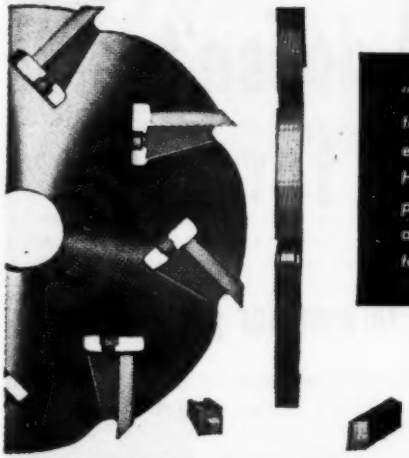
The Saranac UJ Diagonal Slat Crate Stapler completes intricate stapling patterns in one pass through . . . cutting, forming and driving staples only where wanted and where they hold the best. Stapling patterns are easily changed to fit the job to be done. Crate panels are completed in one pass . . . no turning of work at any time.

Let us know your shipping case and crate problems. We will be happy to help you work out a worthwhile solution. Write for Bulletin 167-DS

SARANAC MACHINE CO.
Benton Harbor, Michigan

Manufacturers of the World's Largest Line of Fastening Machinery

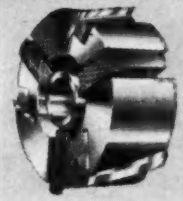
"They've got to be good to stay here!"



"With competition the way it is, we've just GOT to be hard-boiled when it comes to buying equipment. We use JONES & ORTH Cutter Heads because they give us MORE production per dollar, with LESS mechanical grief than anything we've found. They've GOT to be good to stay here!"

AT LEFT is shown a Jones & Orth 8-knife Wedge Type Groover Disc, fitted with corrugated adjustable high-speed steel teeth. Easily adjusted to, and always maintains exact desired width of kerf. Teeth are easily changed, sharpened or replaced. Available in 6" to 14" diameter, 4 to 12 knives.

What's Your Problem?



Illustrated is a Jones & Orth Round Tenoner Head, designed for top production, ease and precision of adjustment, and minimum service requirements.

Catalog? You bet! Let us send you your copy! How else can we serve?

You're not gambling when you specify JONES & ORTH Cutter Heads for your woodworking equipment! Over thirty years of specialized experience in this field assures you of top service and performance from *any* JONES & ORTH Head.

Action? You get it . . . but *fast* with us! Our large stocks enable us to give you "same day shipment" on *many* orders, four out of five in 24 hours!

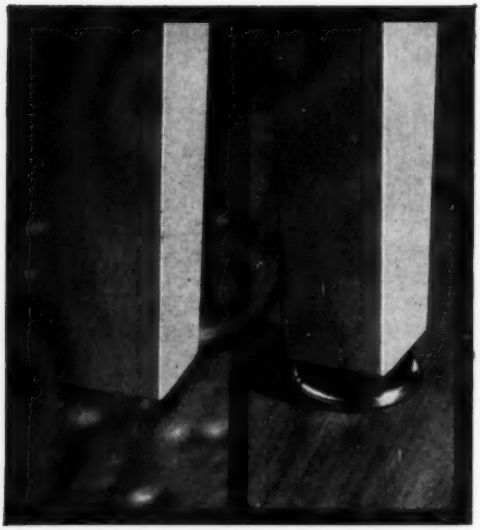
Write today for the name of our dealer nearest you! Address either our Seattle or Memphis branch.

JONES & ORTH

CUTTER HEAD COMPANY

385 SOUTH MAIN STREET
MEMPHIS 3, TENN.

BOX 3064
SEATTLE 14, WASH.



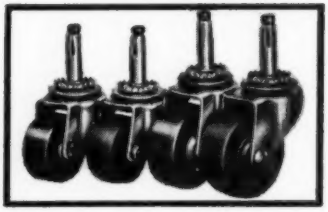
Dimple digging doesn't sell furniture

Put your furniture's best foot forward for greater sales

Smart manufacturers are discarding furniture buttons in favor of broad-based, smooth-sliding Bassick Rubber-Cushion Glides — they can't harm the finest floor.

Add this big, low-cost sales feature to your furniture now. The Bassick Company, Bridgeport 2, Conn. *In Canada:* Belleville, Ont.

"Diamond-Arrow" Casters move chairs, tables, stands, TV sets at a touch. Double-ball design makes swivelling easy.



ADVERTISED IN The Saturday Evening POST

Bassick

A DIVISION OF STEWART SW WARNER

MAKING MORE KINDS OF CASTERS
...MAKING CASTERS DO MORE

Save Space! Save Time! Do a Better Job!

NEW Paramount Multi-Tool Workshop

with the exclusive **"MAGIC BOOM"**
it slides • rotates • tilts!
SEE IT CHANGE FROM TOOL TO TOOL IN SECONDS!

Here, at last, is a precision multi-tool machine that performs the operations of five basic power tools, yet occupies only 20" x 26" of floor space! Unlimited versatility. Faster change-over. New work combinations never before possible. A revolutionary new machine that makes others obsolete!

5 basic power tools in 20" x 26" floor space!

$279.50 retail price
complete with motor and attachments

TWO SAWS! A cut-off saw and a self-retracting push-up saw. Large table has separate slot for dado cutter. 8" blade cuts to depth of 2⅜". Cuts full 2" at the 45°. Correct sawing speed automatically determined by fixed drive.

A SANDER! Largest sanding table in home workshop field. Correct sanding speed automatically fixed by direct drive. Sanding disc mounts on either end of drive spindle. Full 8½" sanding surface from 0° to 45° angle.

A LATHE! Fool-proof center alignment. Distance between centers 31½". Face plate turning diameter up to 16". Use either end of spindle for face plate turning. Changes to correct speeds quickly.

A HORIZONTAL DRILL! No limit to length of work. Finger-tip micro-adjustment for accurate set-ups. Headstock pivots for different thicknesses of wood. Quill feed 4⅜". Overall table size 19½" x 26½".

A DRILL PRESS! A 360° radial drill press. Overall table surface 19½" x 26½". Precision control raises and lowers head. Performs compound angle drilling. Drills to center of 13" circle.

Portable! *Can be carried from room to room...job to job!*

IDEAL METAL PRODUCTS, INC.
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WRITE FOR LITERATURE AND NAME OF NEAREST DEALER

VICTORY *CARBIDE TIPPED* SAWS

ENGINEERED TO CUT . . . UNIT COSTS

Victory Saws are manufactured to answer today's rigid requirements of top quality wood-working and lower unit production costs.

Chip Board — Plywood — Mill and Sash Manufacturers, Lumber and Flooring Mills; Furniture and Cabinet Factories; Laminate and Plastic Fabricators; Home and Boat Builders are enjoying the advantages of VICTORY Carbide Tipped Saws and Cutters. Whatever your wood-working requirements may be VICTORY Saws will answer your needs too!

2 convenient Victory Service Plants to render fast, dependable saw maintenance in Chicago and Memphis.

Write today for FREE SAW CATALOG! If desired, a Victory sales engineer will call to answer your cutting problems.

Victory CARBIDE SAW & TOOL CO.

3856 N. ASHLAND AVE.
CHICAGO 13, ILLINOIS

Phone: Diversey 8-4300

38 Years of Service to the Woodworking Industry

What is Your Part?

In our monthly editorial chats we have discussed a number of things which need to be done for the woodworking industry.

In the last five months we talked about—publicity for the advantages of wood . . . research to discover still more utilizations and time and money to improve present wood products . . . what automation can do for the woodworking industry . . . maximum utilization of the "whole crop." And to start the year off, if you recall, we suggested that every thinking woodworking executive take a little time to park his feet on the desk and think over the whole future of wood, particularly the problem of merchandising wood.

This month we conclude the series. We hope that these half dozen messages from us to you have provoked thought and action.

We think that trade associations offer excellent opportunities to study industrial problems and objectives and to get something done about them. Several winning entries in our Award of Merit Contest are the results of association activities—complete stories about these winners in the July number.

Many associations have advanced the public use and understanding of wood and, at the same time, have done a great deal to help individual members.

We have featured the Douglas Fir Plywood Association and the fir plywood industry in this June issue. One reason has been to show what can be done by an organized, associational effort.

Beginning on page 119, we have described the national meeting of the Forest Products Research Society. This organization has been extremely helpful to its members in developing methods and investigating new materials.

Our April issue featured the Southern Pine Manufacturers Association and the meeting. The biennial show that this group sponsors along with the meeting is especially noteworthy.

These three organizations are typical of the woodworking associations —there are approximately 100 of them—which can help you. A trade group offers an opportunity to do more than any one of us can do individually by way of research, standardization, publicity, etc. We'll be glad to send a list of associations to anyone wishing to have it.

If you want to do your part, investigate the possibility of membership in some group and get behind its efforts to advance the cause of wood to the benefit and prosperity of everyone in the industry.

E. McDaniel
Editor

Pointed PARAGRAPHS

This month WOOD WORKING DIGEST salutes the fir plywood industry which had its beginnings in 1905. Our editorial policy has been and will continue to be one which gives recognition to individuals and organizations who are advancing the woodworking industry. Two events taking place in June on the West Coast—the fir plywood jubilee and the FPRS meeting—deserve our congratulations and cooperation.

Furniture plant orders climbed 16% ahead of '54 volume in the first quarter. Shipments scored a 4% lead . . . unfilled orders rose 29% over last year's record.

Our July issue will bring a first-hand report on the Chicago Market. Many sharp new designs were seen at the unofficial Southern market. Prices are up 2 to 5%. Mahogany and walnut both appeared in gray and gray beige finishes.

Increased sales, lower costs and greater profits will be the theme of the 27th annual NAFM convention and Supply, Equipment and Fabric Fair to be held in Chicago, August 28-September 1.

Los Angeles is soon to begin construction on a $7 million furniture mart. Construction should be completed by October '56.

Exposed unpainted wood wears away at the rate of about a quarter of an inch in 100 years. Properly painted wood surfaces will last indefinitely. Seven out of ten housewives prefer kitchen cabinets made of wood. Let's "give the lady what she wants" and corner this industry for wood.

The postwar trend to houses without basements has been reversed and is now going the other way. The trend to basements has been most evident in better quality houses.

Save Time Save Money

use

DUO-FAST automatic TACKERS

DUO-FAST AIR TACKERS cut production costs on case backs, drawer guides, and numerous other jobs.

MORE WORK, in less time, using fewer workers—that's the story on Duo-Fast Automatic Tackers and Staplers.

WIDELY USED in cabinet and woodwork shops, furniture plants, sash and millwork factories, toy makers, for a wide variety of fastening jobs.

A COMPLETE LINE of AIR TACKERS, HAMMER TACKERS, GUN TACKERS, STRIKE TACKERS, and AIR STAPLERS, including the model to save you time and money.

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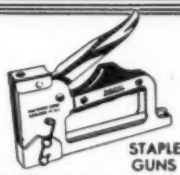
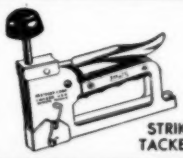


STAPLE GUNS



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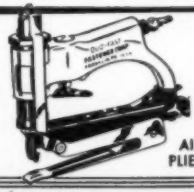

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The cost for equipping a woodworking plant has gone up 84% in the last ten years. Replacing equipment destroyed or damaged by fire is much more costly than it was only a few years ago. How recently have you taken inventory and checked on your insurance policies?

Spokesmen for the nation's lumber industry have warned that a higher minimum wage could create widespread unemployment, drive many smaller sawmills out of business, and actually lower the living standards of low-income workers. An increase in the wage floor would provoke a proportional rise in prices so that "real" wages of low-income workers would remain unchanged. This matter of minimum pay and a guaranteed annual income are important to every small business owner.

A Summer Market that may be among the best in recent years in buyer attendance is being predicted by exhibitors in Grand Rapids as they are making final preparations for the June 20-July 1 showing.

Contract awards for future construction in the 37 eastern states in April shattered many previous records. The record-breaking total of over $2 million 3 hundred thousand was 37% higher than April 1954. This year may be the eleventh consecutive year of construction volume increase.

It is prophesied that designer identification tags, permanently mounted on furniture, appliances and other home furnishings will be the next step in building retail sales through better design.

Woodworking machinery orders are up 61% over the same month a year ago. Those figures, furnished by the Woodworking Machinery Manufacturers' Association are for March.

Seven round-tables to seek agreement on dimensional standards for components are being held by the American Standards Association and the Research Institute of NAHB. Without these dimensional standards next to nothing can be done about standard components and subassemblies to cut the cost of building better houses.

Coming next month!
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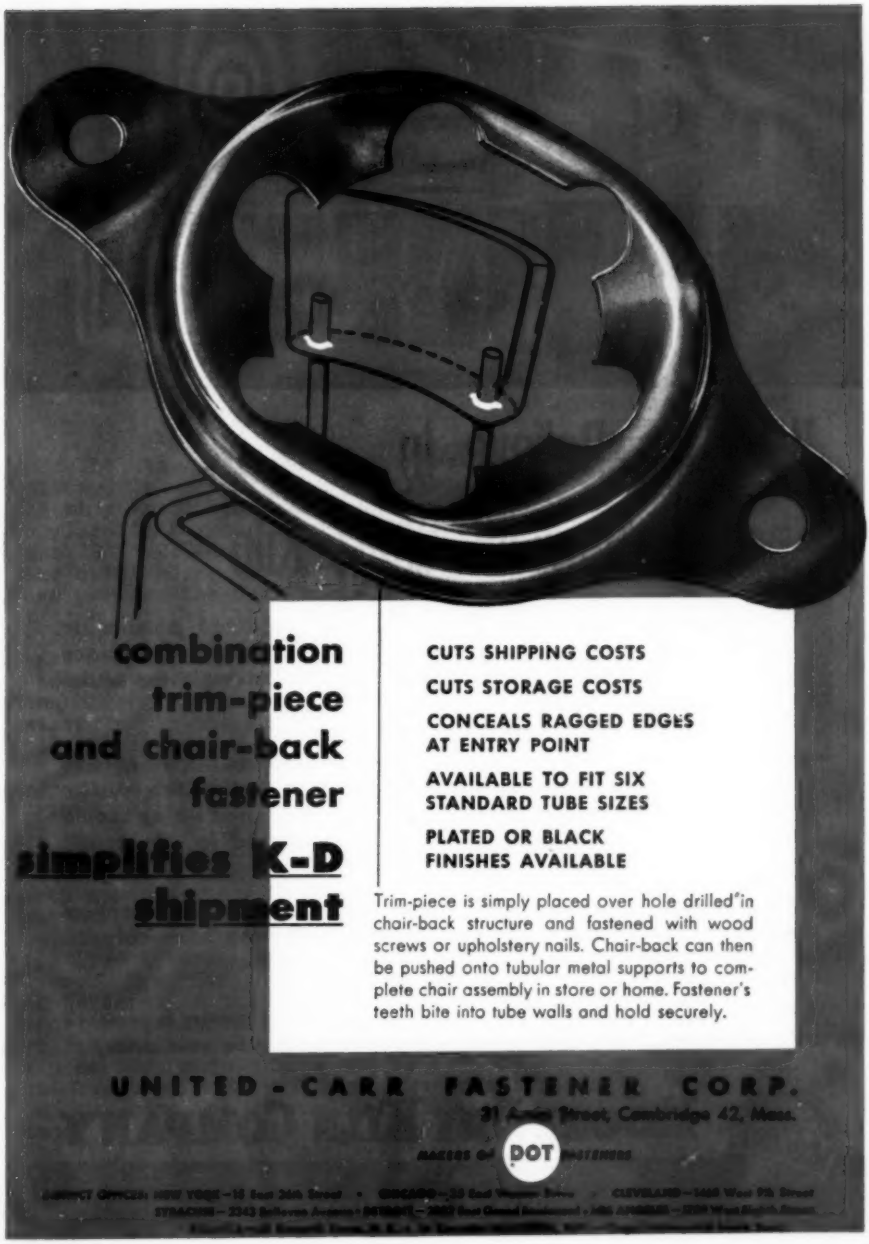
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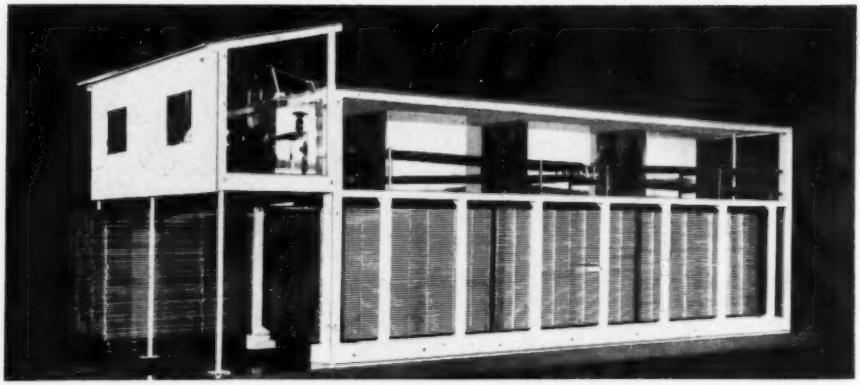

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Comments from THE NATION'S CAPITAL

By Arnold Kruckman
Washington Correspondent

The Capital is keenly interested in the Golden Jubilee of the Douglas fir plywood industry which has been organized by the Douglas Fir Plywood Association in Portland June 19 to 21, inclusive. Whether or not some outstanding figure from Washington will take part in the dedication of the memorial, at this writing, the middle of May, is still unknown. It was hoped that the President might be persuaded to visit Portland and make a notable address. His brother, Ed N. Eisenhower, who is a lawyer in Tacoma, was interested in the project, but apparently got into it rather late in its planning.

If the President is unable to make the trip it is hoped, that despite Oregon's curious politics, Vice-President Nixon may be induced to take his place. An invitation was also given to Lt. General Leslie Groves, formerly of the Atomic Energy Commission. His participation largely depends upon his ability to get back from South America where he was obliged to make a scheduled visit, leaving here in the early part of May.

There are few industries of national scope that have the wide live interest in Washington that attaches to the Douglas Fir Plywood. Mrs. Oveta Culp Hobby, Secretary of Health, Education and Welfare, is interested because plywood will be one of the important constituents in carrying out the $7 billion school program which unquestionably will be approved by Congress before this session ends. Also she is interested because anything that has to do with softwood plywood interests the women of the country. And the Director of Education in her Department, Samuel M. Brownell, brother of the Attorney General, is more than likely to be present even though he doesn't speak. It is known that Administrator Albert M. Cole of the Housing and Home Finance Agency would like to attend the dedication of the memorial. Housing is one of the primary major interests of the Agency, particularly of the Federal Housing Administration

which is one of the units under Mr. Cole. This Administration is headed by Norman P. Mason as Commissioner and it would not be extraordinary if Mr. Mason would make the trip to Portland.

Another Agency naturally interested is the Forest Service of the Department of Agriculture which is headed by Richard E. McArdle as Chief. And it is quite certain that Secretary of Commerce Sinclair Weeks would do something to mark the occasion if he were in this country. Unfortunately he is visiting Europe attending a number of affairs at the request of the White House.

The Forest Products Division of the Business and Defense Services Administration in the Department of Commerce, has a lively interest and will undoubtedly be represented; but it is not yet known who will be present at Portland. Frederick C. Talbot, Jr., is the Director of the Forest Products Division. James M. Owen is the Assistant Director for Lumber and Wood Products, and is widely known for his cooperative spirit in relation to the industry. A. D. McKellar is Program Executive for Lumber. Tom C. Mason, is in charge of all types of plywood, veneer and fabricated products, and is a highly trained man of the forests.

Obviously the Interior Department, Defense Department and the home-building Veterans Administration has an interest in softwood plywood. Another member of the Government with a special interest in the product is Commissioner Lowell B. Mason of the Federal Trade Commission, as well as Chairman Richard F. Mitchell of the Interstate Commerce Commission.

The BDSA announced recently that a new edition of the Douglas Fir Plywood Commercial Standard CS45-55 had been issued, and was being circulated by the Commodity Standards Division of the U.S. Department of Commerce. This ninth edition may be had from the Superintendent of Documents in the Government Printing Office.

It is a revision of the previous edition issued in 1948. In addition to providing requirements for the seven grades of interior type and six grades of exterior type covered in the previous edition, the revision covers two special items of interior type, another grade of exterior type, and descriptive paragraphs and rules governing the manufacture of overlaid plywood. It also includes reproductions of the Douglas Fir Plywood Association's new inspection certificate and registered grade trademarks.

The revision was recommended by a standing committee of the industry, and has been endorsed by a majority of the producers and representative users of Douglas fir plywood.

The U.S. Tariff Commission is expected to announce its decision on the hardwood plywood hearings on June 22. This report of the decision goes to the President and is expected to strongly recommend the remedies requested by the hardwood plywood industry. As already suggested, it is anticipated the President will not approve the Tariff Commission recommendation.

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A western Congressman recently made a great deal of the fact that the Bureau of Mines had divested itself of wood product shops in experiment stations, and was giving the work to private industry by contracting for the services. He made a good deal of the fact that this meant the ultimate saving of $175,000 a year.

The Senate Small Business Committee reported that the Department of Defense has withdrawn from all logging and sawmill operations with one exception. It does not state what this means in saving in terms of dollars per year.

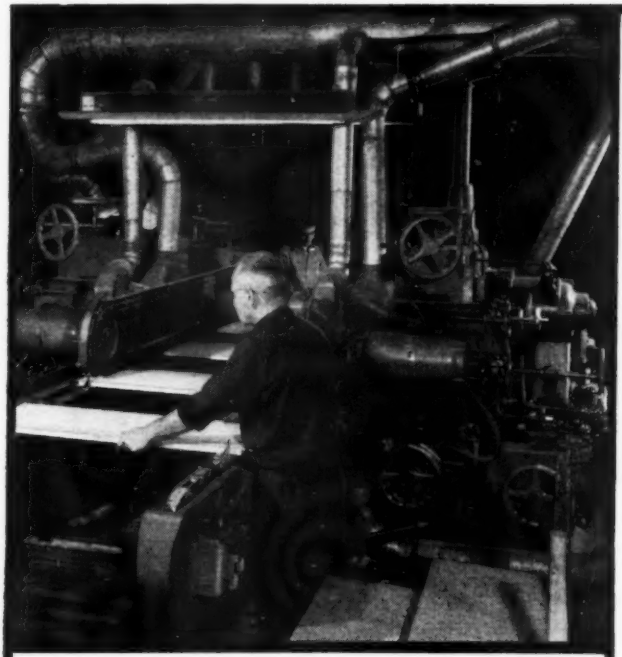
On the other hand, in its most recent report, prepared by Eugene F. Rinta, Research Director for the Council of State Chambers of Commerce, one of the most reliable agencies of the kind in Washington, it was predicted there would be a very definite renewal of the uptrend in Federal spending which will make it impossible to balance the nation's budget in the next few years, unless Congress rejects proposals for the recently launched new big spending program. These, according to Mr. Rinta, include "greatly expanded Federal aid for school construction, greatly expanded Federal aid for highways, and the $3.5 billion demanded for new foreign aid funds which are to be added to a present unexpended balance of about $9 billion.

"There are just two things left for Congress to do if the budgets of the next few years are to be balanced without long postponement of needed tax reductions. These are to stop enactment of new spending programs and to refuse an extension beyond June 30, 1955, of any increase in the $275 billion ceiling on the public debt."

The various organizations in Washington devoted to the study of tax problems declare that new or increased tax proposals flood practically all legislatures of 46 States which have met, or will meet this year to consider State budgets. In five other States the programs will be presented before the middle of June. Only Kentucky and Virginia have not scheduled a legislative session for 1955. They point out that only one Governor has proposed tax reductions. Governor Craig of Indiana advocated repeal of the chain store tax, and liberalization of certain exemptions from the State's gross income tax. He opposed, however, a Korean Veterans' bonus and an increased gasoline tax. He said that self-financing toll roads (rather than more highway-user taxes), are the only answer to the State's highway problem.

A bill has been introduced to amend the Internal Revenue Code of 1954, to provide that a taxpayer may deduct amounts paid to acquire, improve, or repair a home, to the extent that such amounts do not exceed 5% of his adjusted gross income for the taxable year. In other words, if this legislation is adopted, homeowners may deduct what they spend on their homes for improvements or repairs or in acquiring new homes, from their total tax up to 5% of the gross income tax that they pay for the year.

Various Government agencies report that the business upswing has definitely carried upward during April. Many measures



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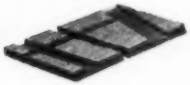

Dadoing window frame stiles

Blind dadoing and rellishing panels

Beveling and cutting clamp nail grooves

Sizing, tenoning, and coping door rails

GREENLEE

are said to have reached, and some have exceeded, the peak figures of 1953. In the space of half a year the nation's output of goods and services rose $13.5 billion from the third quarter 1954 low of $355.5 billion to $369 billion in the first quarter of this year. Reports indicate improvements and expansion continue. Government agencies point out this strong showing reveals that recovery has been achieved.

However, while some authorities are quite lyrical about the showing, others suggest there are indications of a leveling out of the upswing, and in some lines of a decline in operations, sometime during the summer months. They express the hope that the broadening general improvement will be limited to the usual seasonal proportions, but beyond that point the question is what will carry business forward again. It could be inventory accumulation. But inventory building at a rapid rate is regarded by these sober students as more disturbing than reassuring.

They tell us more people are employed for longer hours and higher wages while unemployment is declining. The discussion of "automation" continues.

Before the end of this Session, Congress will be urged to provide legislation enabling the President to control the entire economy—prices, wages, credit-rationing, etc., to become effective in the event of war. The vast majority of people despise control-compulsion. Many Congressmen think the entire question of controls should be left in abeyance, and that Congress should not act until it is called back if there is any need for this sort of legislation.

The drive to increase the minimum wage from 75¢ to $1.25 is persistent and apparently something of the kind will be put over. Spokesmen for the nation's lumber industry have strongly advised against the increase. They think it will drive many sawmills out of business, and lower the living standards of low-income workers. The other labor problem is a proposal to establish a wage annual guarantee. This also is widely opposed.

August 22-26, at the Lumber and Wood Products Laboratory of the Timber Engineering Company there will be held the twenty-fourth short course in wood adhesives and gluing. The course is designed for management and production personnel of furniture, woodworking and glued laminated industries. Those interested are invited to communicate with TECO, 1319 Eighteenth Street, N.W., Washington 6, D.C.

More than 40 million visits to national forests last year made a new record, according to Department of Agriculture. The Forest Service also reported Louisiana's forests are growing more timber than is being cut. The Forest Service reports wood products treated with preservatives at plants throughout the country in 1954 dropped about 16%. Five national forest regions and five forest experiment stations, last year, made outstanding safety records. The Forest Service found in a survey that California forests contain 360 billion board feet of saw timber. And at Gulfport, Mississippi, the Service established an

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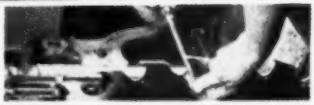

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Institute of Forest Genetics to carry on basic research in tree breeding to develop hybrids with some special characteristics such as fast growth, high pulp yield, or resistance to insects or diseases.

Lumber shipments of 508 mills reported to the National Lumber Manufacturers Association were 8.2% above production for the week beginning May 1. New orders were 22.9% above production. Unfilled orders reported 50% of stocks. For the reporting softwood mills unfilled orders were equivalent to 25 days' production at the current rate, and gross stocks were equivalent to 47 days' production. The same source reports lumber production estimated at 3,363,000,000 board feet in March, 1955, exceeded February output by 15%. Softwood indicated a gain of 18% over February while hardwoods were up 4%.

Office of Technical Services, U.S. Department of Commerce, reports printed copies of Commercial Standard CS193-53, covering Standard Stock Ponderosa Pine Insulating Windows and Sash, are now available. The standard was proposed by the National Woodwork Manufacturers Association.

Assistant Secretary of Commerce for International Affairs, Samuel W. Anderson, announced the establishment of an Office for Foreign Investment to serve as a clearing house of information on investment opportunities overseas. Joseph M. Marrone, Executive Director of Foreign-Trade Zones Operations was appointed to serve as Director of the new office. His Assistant is John Nuveen, Chicago investment banker, and M. N. Harocopo, former Deputy Director of the Department's New York field office.

The House Appropriations Committee refused to provide the State and Commerce Departments $600,000 to employ twenty-three commercial attaches in various embassies abroad for the sole purpose of assisting American business men. The Senate Appropriations Committee will take the matter up for further discussion.

A recent allocation of five million dollars for various purposes by the Foreign Operations Administration to Israel included $100,000 for lumber and sawmill products. It was specified that these could be bought anywhere except in Canada. The formal specification was "world wide except Canada."

About the same time, the Foreign Operations Administration allocated to Turkey $11.834 million. The procurement of the long list of materials and products was placed under the control of the Department of the Army. An item of $122,000 was specified for lumber and sawmill products.

Korea was given, by the Foreign Operations Administration, $2.545 million out of which $187,000 was set aside for lumber and sawmill products. Again it was specified that the source of procurement might be world-wide except not in Canada.

Iran received from FOA $100,104 for the purchase of certain types of wood and for the procurement of a sawmill. The procurement was designated to be carried out through the Emergency Procurement Service of the General Services Administration.

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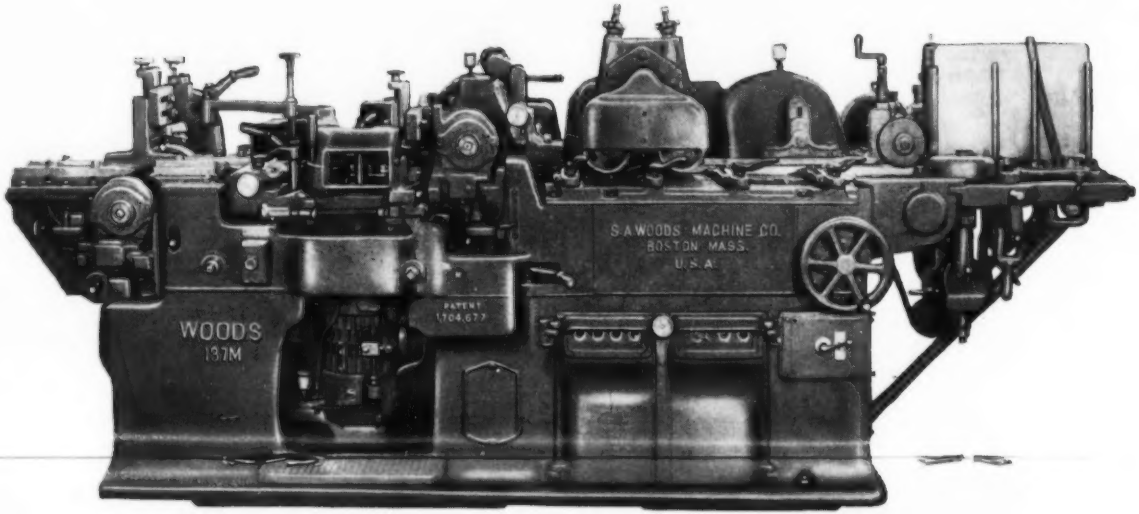

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LETTERS To The Editor

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J.F.M., North Carolina

"We have a customer who wants to contact an eastern company as a market for his product. Our customer is making shaped pieces from alder and maple."

J.F., Seattle

"May we take this opportunity of complimenting you on the WOOD WORKING DIGEST which we consider one of the most informative and interesting magazines pertaining to the industry."

L.K.J., Mississippi

"We are very much interested in the subject of tumble finishing wood products. Will you please publish an article on this technique? I believe we could well use this process in our own manufacture."

M.M., Illinois

"Please give us more information about automation. We are also in the market for 13/16 x 2 S4S KD, random lengths of either red birch lumber or dark cherry."

H.M.J., Pennsylvania

"This is our second order for some of your technical series booklets. They are fine—informative, convenient to carry or file and contain excellent material."

C. J., Indiana

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Hear from you if you are interested in answering any of these readers. We have already written to them with our recommendations.

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Your questions.

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Next month for some special features . . . reducing waste in a furniture plant . . . the Chicago Market . . . wood machining story.

1905 to 1955

DOUGLAS FIR PLYWOOD INDUSTRY

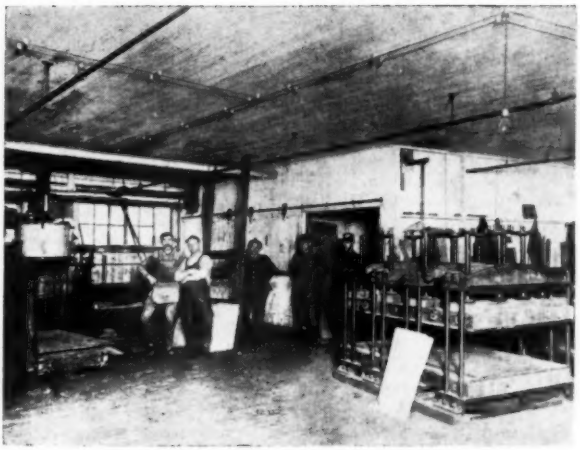
a salute to PIONEERS in Douglas Fir

by Thomas Perry

PLYWOOD had its beginnings in the United States some 80 years ago, when Henry Gardner of New York City first introduced curved and perforated plywood seating about 1875. Until the turn of the century, plywood was very little used outside of the furniture field, and practically all of this plywood was made from hardwoods. Plywood in furniture was prized chiefly because it provided an opportunity to display and reinforce beautiful, but often fragile, face veneers. There were other reasons, dimensional stability, non-splittability, distributed strength, and the like, but the artistic factor dominated its use.

The year 1905 ushered in a new era for plywood, when a leading softwood, Douglas fir, on the Pacific Coast, began to come into the market in plywood form. It is doubtful if anyone then was visionary enough to dream of the importance it would attain as a structural product.

This is the semi-centennial year for Douglas fir plywood, dating from its introduction to the public at the Lewis & Clark Exposition in Portland, Oregon, in 1905. Perhaps before examining in detail the early struggles of the pioneers in this new industry, it may



Interior view of the old Portland Manufacturing Co. plant as it appeared in 1907, a short time after the first panels were manufactured.

be well to take a backward look, statistically speaking, and get an idea of its marvelous growth during this half century. The accompanying graphic chart gives official production data, as to the number of plywood mills in operation, and the total annual output of Douglas fir plywood, on a ⅜" thickness base, which is the standard measuring stick of the industry. Any production figures, prior to 1923, are too sketchy to plot, but these 18 years witnessed the early growing pains of an industry striving to gain a foothold. Subsequent to 1923 progress was still slow, but the production line sloped upward, except for a dip in the early 1930's when the depression was at its worst. It was not until 1935 that the aggregate output crossed the 500 million mark, produced by 17 mills, a number that had not changed since 1930.

By 1915 casein glues had become available, largely displacing the earlier animal and vegetable glues. This was definitely moisture resistant, but neither waterproof nor weatherproof. Hence Douglas fir plywood, in this era could not be ultilized satisfactorily under severe weather exposure.

The last half of the 1930 decade was marked by two events that gave a definite impetus to the industry: The first was the adoption of phenolic resin adhesives, hot pressed, that permitted making really waterproof plywood, designated as the "exterior type." This glue was developed by Dr. J. V. Nevin, and its production was sufficient to be plotted by 1937. The other event was the organization of the Douglas Fir Plywood Association in 1938, which, under the dynamic leadership of W. E. Difford, has grown into a most efficient promotional factor of tremendous significance to the industry.

Beginning with 1940, except for the restrictions of the years of World War II, the production line from 25 mills assumes a much steeper upward slope, reaching almost four billion square feet in 15 years, with an even hundred production units.

Wilson Compton, manager of the National Lumber Manufacturers Association, in his introduction to "Modern Plywood," says:

> "The rise of plywood is one of the most dramatic and significant chapters in the history of the American Lumber and T i m be r

Products Industry. Little more than a novel idea during World War I, it has now become an industrial giant."

It is to be noted, on the chart, since Wilson Compton made this statement, in 1942, the number of operating mills has increased from 31 to 100, and the production from one and three-quarter billion to four billion square feet, an increase of about 125%. There is an interesting contrast here. General Motors, one of the largest industrial organizations in the country, increased its unit production from two million in 1940 to three million eight hundred thousand in 1954, or only 90%.

Pioneering in Douglas Fir Plywood

One of the most fascinating phases of this phenomenal growth is to look back at the early beginnings of this history, to recount the struggles of the first few plywood mills, and to give a few glimpses of the strenuous endeavors of some of the hard working pioneers who laid such an adequate foundation for industrial progress.

These personal sketches will be limited to the first 25 years of the industry's history, 1905 to 1930, when the production figures stood at about a quarter of a million square feet, with 20 operating plywood mills.

First fir plywood panel is shown in the Forestry Building. It was exhibited at the 1905 World's Fair Exposition in Portland, Oregon.

GUSTAV A. CARLSON, Swedish-born box maker, was manager and co-owner of the Portland Manufacturing Co. plant at Saint Johns, Ore. Carlson died little more than a year later without seeing much of the growth of the fir plywood industry.

PETER AUTZEN, co-owner of the Portland Manufacturing Co., Saint Johns, Ore., in 1905 when the first fir plywood panels were manufactured. Autzen lived to see the start of a great industry and his son, Thomas J. Autzen, become prominent in the new industry.

Lewis & Clark Exposition, 1905

The birth year of the Douglas fir plywood industry was 1905, when a few Douglas fir plywood panels of substantial size were shown at this exposition in Portland. It is another interesting contrast to note that, in 1939, many of the buildings in both the New York and San Francisco Exhibitions, a third of a century later, were constructed largely of Douglas fir plywood.

Little is known of the scope and character of this Portland exhibit, and its significance was little appreciated at the time. It was under the direction of Tom Autzen, then a youth preparing for entrance to Oregon State College, where he majored in electrical engineering. His apprenticeship as showman at the Lewis & Clark Exhibition stood him in good stead, and later he rose to prominence in the Douglas fir

THOMAS J. AUTZEN, son of Peter Autzen, co-owner of the Portland Manufacturing Co., St. Johns, Ore., where the first fir plywood panels were made. He displayed the first panels at the 1905 World's Fair Exposition.

LAWRENCE OTTINGER borrowed $500 to get started in business in 1919. He used his fabulous sales and promotion talents to build the great U. S. Plywood Corporation. One of the greats, Ottinger died in December '54.

IRVING F. LAUCKS became interested in soyabeans after World War I. By 1923, he had perfected a plywood panel glue made with soyabean as a base, providing the plywood industry with a badly needed boost.

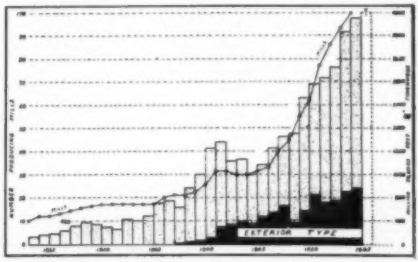
W. E. DIFFORD became managing director of the Douglas Fir Plywood Association in March, 1938. He has carried on a vigorous sales promotion program which has kept the industry's order file full.

plywood industry. It would be interesting to know what claims young Autzen made for the use of his fir plywood. These plywood panels for the exhibit must have been laboriously made by manual methods, since mechanical production did not start until about 1910.

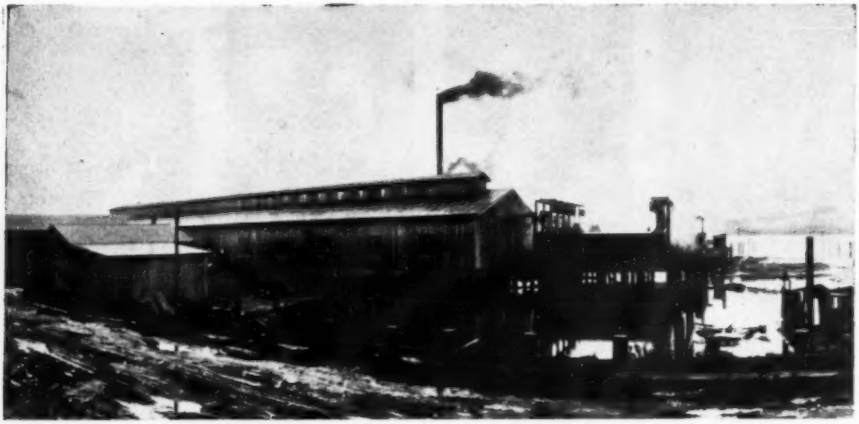
Portland Manufacturing Company

This company was organized in May, 1901, with fir doors as its major product. In 1905 it made the plywood panels that were shown at the Lewis & Clark Exposition, thus becoming the first mill, of record, to make fir plywood in substantial sizes. At that time the company was owned by Peter Autzen, (Tom Autzen's father), and Gustav A. Carlson, the latter being the active manager. One of their most competent mechanics, N. J. Bailey, was employed in 1903, after a wide experience in operating veneer lathes in the midwest, where plywood for furniture was a standard product. It seems probable, as well as a logical outgrowth of his experience in furniture plywood, that Bailey was responsible for introducing plywood as an improved material for door panels, although there are no records to bear this out. N. J. Bailey was the father of William C. Bailey, who in later years was the manager of the large United States Plywood Corporation's operations in the west, and who became an important and dynamic leader in the plywood industry.

At this time, in 1905, the available equipment for making plywood was manually operated with screw presses; the glue was undoubtedly spread with



Graph of production and mills in Douglas fir plywood.



The Olympia Veneer Co., about 1921, when the mill opened to become the nation's first worker-owned plywood plant. The mill and scene have changed since then. In 1946 the St. Paul and Tacoma Lumber Co. purchased the mill.

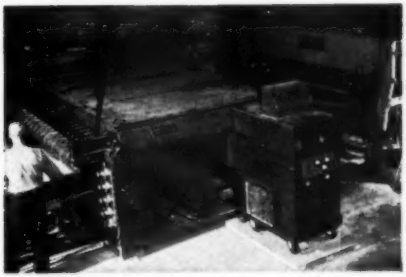
hand brushes, with other steps equally primitive. It was not until about 1910 that mechanical equipment was introduced into these West Coast plants.

Subsequent to the exposition, in the fall of 1905, Manager Carlson reports receiving many requests for the plywood shown and demonstrated by young Tom Autzen. To what extent these orders were accepted and filled, the record does not reveal. It seems certain that such plywood was made by these crude methods, using either animal or vegetable glues, neither of which were water resistant. Casein and hot pressed albumin glues did not become commercially important until about 1915, when their use became mandatory for aircraft construction, as it was being developed for military defense. The present Portland Manufacturing Company mill, is now leased by Tom Autzen to the M & M Manufacturing Company, and is operated by him as the Portland Plywood Division of M & M.

Wheeler-Osgood Company, Tacoma

This company was organized in 1889, but there is no evidence that it ventured into the plywood field until 1910. Their equipment was adapted to making door panels, as were most of the early plywood mills. Whether any plywood door panels were made before the Portland Manufacturing Company made them in 1905, is a matter of conjecture, but Wheeler-Osgood might have done so. George J. Osgood, son of the original owner, George R. Osgood, was the first employee of the company, hired as a bookkeeper, and destined to become an important influence in the fir plywood industry. Another youngster, Gus Bartells, was employed as a floor sweeper, and later became a leading factor in the expanding ranks of plywood stalwarts.

Another colorful member of the Wheeler-Osgood staff was W. S. (Bill) Nurenburg, who entered its employ in 1912, and was the first of many salesmen to cross the Rockies with a plywood sample kit, and to solicit orders from potential users of plywood in the central and eastern states. The records are meager, but it is believed that his first orders were for panels for eastern door makers, since any structural uses of plywood are not recorded until about 1920.



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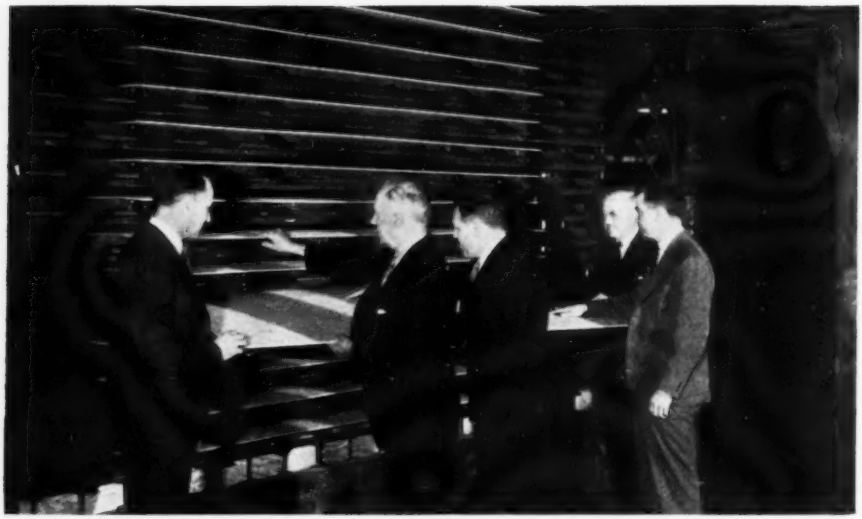


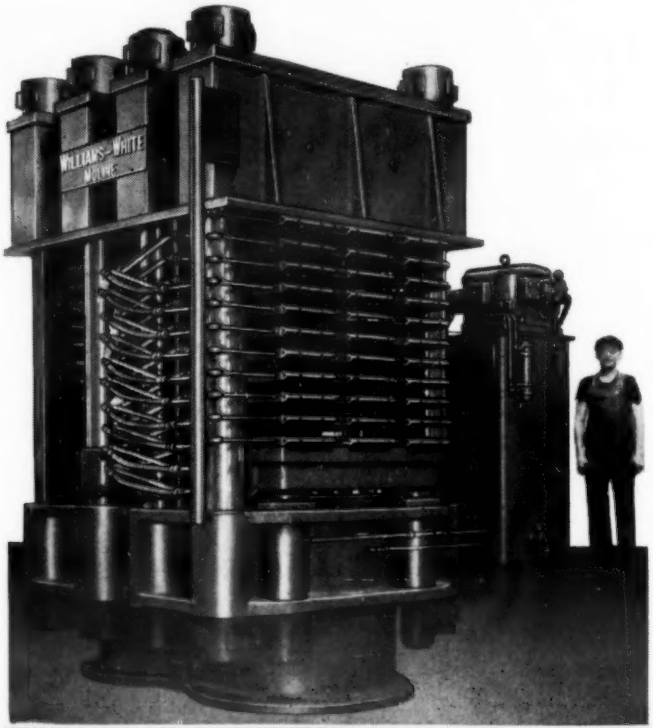
First panels of exterior fir plywood manufactured with waterproof glue at the Harbor Plywood Corp. In front of the Harbor hot press are: A. R. Welch, now vice-president of West Coast Plywood Co.; Dr. James Nevin, research chemist who developed first waterproof glue for Harbor Plywood Corp.; Huber Wise, then production manager and secretary-treasurer of Harbor Plywood; E. W. Daniels, past president and now marketing consultant for Harbor Plywood; and A. R. Wuest, now president and general manager of West Coast Plywood Co.

McCleary's Mill

Henry McCleary was a rough and ready type of fellow, who sported a massive beard, and went about his work with a six-shooter hanging from each hip. He was an expert marksman with a reputation for picking off the spots on the five of spades at 20 yards. No one ventured to dispute his word, but, withal, he was an able lumberman and door manufacturer. By this time, George J. Osgood (from Wheeler-Osgood) had joined the McCleary organization, and in 1911 they were producing plywood door panels, chiefly for their own use.

An old tradition lingering around one of the McCleary hotels was a graphic, although crude, demonstration of the strength of plywood. Many of the burly woodsmen spent their hilarious week-ends in this hotel, with inevitable attending grief to the building and equipment. One of their favorite diversions was to demonstrate their boasted strength by knocking out solid door panels, which were about shoulder high, by a single wallop of their massive fists. An ingenious hotel manager figured out that plywood panels might discourage this destructive sport, and they did. The result was many bruised fists and wrenched arms until the word was passed around that these new plywood door panels would not break, splinter nor crack. This brought these door wrenching exploits to an abrupt end.

While these three plywood plants (Portland Manufacturing Company, Wheeler-Osgood and McCleary) supplied the panels for their own doors, it was not long before outside door makers began to buy their plywood panels, and a modest beginning in merchandising plywood was in the making. Soon it was discovered that fir plywood was a



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Elliott Bay Mill Co. tried many early-day promotion ideas and stunts. Here 11 workers stand on a plywood panel to demonstrate strength. Kneeling, center is Gus Bartells.

new and useful material for trunk and valise stock, as well as for drawer bottoms. This outside trade grew slowly, but steadily, but as yet there was no suggestion of the structural uses of plywood.

Buffelen Manufacturing Company

The fourth plywood mill on the coast was that of John Buffelen of Tacoma, which started to make its own door panels in March of 1916. By 1919 this firm had built up quite a business in the east. Most of these consumers were door manufacturers, and still the records do not reveal any structural classifications. In 1923, Phil Simpson became a member of the Buffelen staff, and is now manager of the firm. He was one to recognize the need for a trade-wide sales promotion program and was a pioneer in the movement to set up the Douglas Fir Plywood Association.

Elliott Bay Mill Company

In 1919 Gus Bartells left the Wheeler-Osgood Company and started out on a search for capital to set up what he hoped would be the first worker-owner plywood plant. He was looking for men who had $10,000 to $25,000 and who were willing to be partners with him in the new plywood enterprise. After a trip up and down the Pacific Coast, he came home discouraged and without backers. On his return he chanced to meet Craig L. Spencer of Seattle. After a careful scrutiny of Bartells' plans and an inspection trip through the Wheeler-Osgood plant, Spencer told Bartells, "Never mind looking for any more money, I'll finance the whole deal."

That was the end of the first attempt at a co-operative plywood operation. However, it seems probable that the unlimited backing of Spencer resulted in a much better equipped mill than could have been otherwise provided. Gus Bartells was a skillful planner, with a constructive imagination, and his mill, when built, was the last word in efficiency. It was also the first mill to make plywood exclusively, without an auxiliary door department. Bartells was also an enthusiast, and after his mill was in operation, took long trips, east, south and south west, establishing dealerships and opening up new markets for plywood. He is generally credited with being the pioneer of a nation-wide chain of dealers.

It was about this time, in the early 1920's, that the structural qualities of plywood began to attract attention,

Dr. James V. Nevin, an Irish immigrant who came to this country in 1905. With Michael Pasquier and William Martin he developed a phenol resin glue suitable for use in the volume production of fir plywood and made exterior plywood possible.

and the fir plywood business was really on the way up, although the total volume of plywood sold in those years looks pitifully small in the light of later developments. Plywood had outgrown its short pants and was now ready to don full length trousers in the structural plywood field!

Olympia Veneer Company

This was the seventh of the pioneer plywood mills, and the last that space will permit. It was started in 1921 by J. J. Lucas and E. E. Westman, employees of the Defiance Lumber Company of Tacoma. This was also a cooperative venture, which was successful, but only after many hardships. The first goal was 125 worker-owners who put up $500 apiece, a total of $62,500. When this proved to be inadequate, each man dug up an additional $500, making an original cost of $1,000 per share for the 125 worker-owners. Even at that it was more than a year before any of them drew a salary. It was a gruelling procedure for this group, and they had to learn the hard way. It proved to be an effective and valuable experience, for it helped to shape the plywood careers of many of the later day leaders in the industry.

Among them were: Wm. C. Bailey, later vice-president and manager of the United States Plywood plant; Leonard Nystrom, who became president of the Associated Plywood Mills; Arnold Koutonen, now general manager of the St. Paul and Tacoma Lumber Company; Emil Nyman, now superintendent of the United States Plywood Corporation; and many other outstanding plywood executives.

The Olympia Veneer Company was an independent plywood unit, the second of its type, which did not make its own doors. While much of its early business must have been door panels, structural plywood was gaining in prestige, and, little by little, became the dominant product from this mill.

Laucks Laboratories

One of the important factors in the growth of the Douglas fir plywood industry was its soybean glues. At the start of the fir plywood program, animal and vegetable (cassava) were the only available glues, and neither were water resistant. Casein, developed in England, became available in the United States during World War I, when it shared with hot pressed blood albumin glues in the aircraft plywood program. While both had substantial water resistance, they were too costly for most types of fir plywood. Irving F. Laucks, a chemist, discovered the adhesive qualities of soybean meal while testing soybean cake imported from the Orient, through Seattle, as a food for live stock. This was under United States Government supervision during the late years of World War I. This discovery

The data in this story have been verified by the Douglas Fir Plywood Association. The evaluations of the individuals are those of the author. The helpful co-operation of the D.F.P.A. and the supplying of the photographs are much appreciated.

prompted Laucks to undertake to develop a new glue that would supply this need of the plywood industry. It would have to be in the low cost ranges, with reasonable water resistance, and made from the residue of soybeans, after the oil had been pressed out.

At first, in the early 1920's, the soybean cake imported from the Orient, had wide variations in quality and the resulting glue was unreliable. By 1923 sufficient progress had been made in quality requirements to permit the use of soybean glue in plywood, and the business started in a small way. This development by Laucks was at the urgent request of the Olympia Veneer Company (Organized in 1921), which had found the use of casein too costly, and not wholly to their liking. The patents on this soybean development were granted in 1927. At about the same time soybean had been successfully grown in the United States, and the first processing plant was established at Bloomington, Illinois. This facilitated quality control and the soybean business grew by leaps and bounds. Soybean glue is now the principal adhesive used in "interior types" of fir plywood, and its success has been a distinct aid in the growth of the fir plywood industry. This achievement, in providing a low cost and water resistant glue, entitles Irving Laucks to be ranked as one of the pioneers in the Douglas fir plywood industry.

United States Plywood Corporation

The predecessor company, the United States Plywood Company, was organized in 1919 by the late Lawrence Ottinger, a government inspector of aircraft plywood during World War I. He was also one of the early promotors for the use of casein glue in aircraft plywood. Larry Ottinger was first and last a merchandiser, and did not enter the plywood manufacturing field until 1937. It was his conviction that the then existing procedure of ordering dimensioned plywood in customer sizes was wrong. He was sure that plywood would be much more widely used if it were available in standard sizes, from local warehouses in principal consuming centers. Ottinger started a small warehouse on Fourteenth Street, New York City, in 1919, his entire stock in trade being surplus aircraft plywood, from World War I, which he had bought for a song. His enterprise was a success from its start, although the first ten years were rough going. He found that attempting to change firmly established buying habits of plywood users was a long and tedious task. Often he put more emphasis on a modest order for new uses of plywood than he did on steady orders from old customers.

Ottinger's appearance in the plywood field was at about the same time that Gus Bartells, of the Elliott Bay Mill Company, the first commercial plywood company, was in the midst of his strenuous campaign to obtain a chain of dealerships for fir plywood. Larry Ottinger in the east and Gus Bartells in the west were an efficient team in those early years, although they may not have been aware of it. They were both zealous in preaching the gospel of standard sizes of plywood, in warehouse stocks, and easily available to every potential user.

The phenomenal success of the United States Plywood Corporation snow-

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balled into a tremendous market for fir plywood, and did much to establish the world wide reputation of Douglas fir plywood.

Today, as we look backward over the years, it becomes increasingly clear that Larry Ottinger on the Atlantic Coast, and W. E. Difford of the Douglas Fir Plywood Association on the Pacific Coast, both ardent promoters, were among the aggressive leaders who were largely responsible for the enormous growth of fir plywood production and sales, as well as for its far flung distribution facilities. They had many efficient co-workers who shared, whole heartedly, in this vigorous leadership.

Conclusions

It is to be regretted that this story of Plywood Pioneers cannot mention many other plants and their leaders, all of whom were part and parcel of the rapid and sturdy growth of this industry. Those that have been noted are only typical of many others.

The history of a product is one thing, but a far more interesting phase is to learn of the visions, of the struggles, of the hard work, and of the achievements of the pioneers, which have led the way to the eventual success of their product.

The growth line of plywood production, as shown on the chart, is moving steadily upward at a constantly accelerating pace. It would be a bold and venturesome prophet who would predict its future 50 years hence, in the year 2005!

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"No," replied the second, "this is Thursday."

"So am I," put in the third. "Let's stop and have one."

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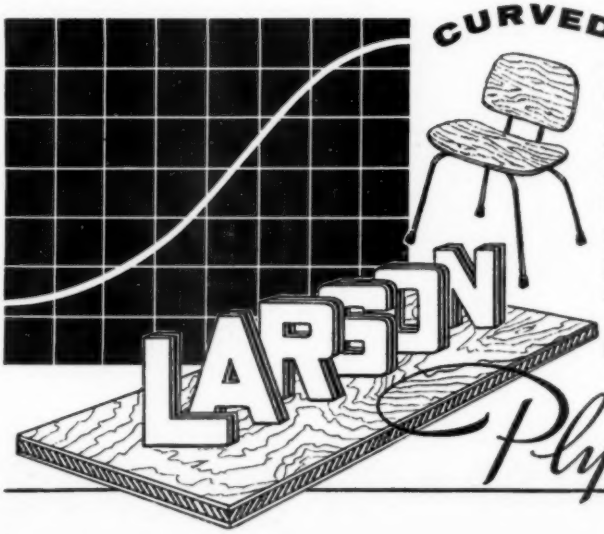

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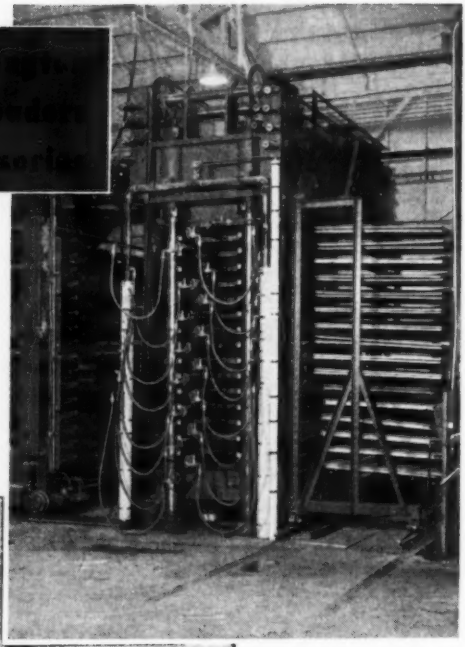

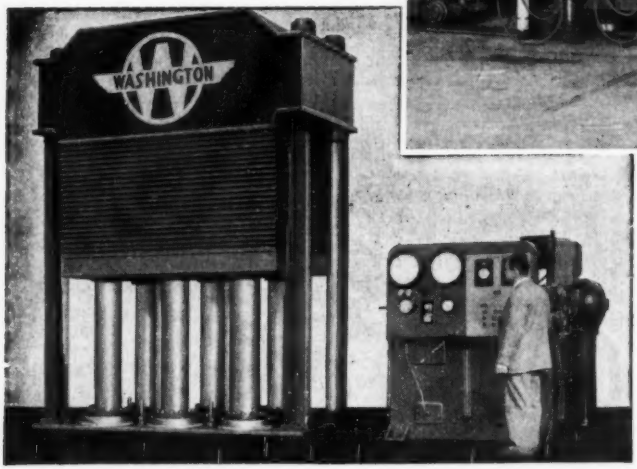

Above, 600-ton, 16-opening, 225 p.s.i. Washington press with counter-balance feature for both plywood and door production at McCleary division of Simpson Logging Co.

Left, standard 850-ton, 20-opening, 350 p.s.i. Washington plywood press and controls.

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The Beginnings

The Portland Manufacturing Co. shown in a photo taken shortly after the first plywood panels were made. This plant burned to the ground in 1910 but was later rebuilt and is now operated as the Portland Plywood Division of the M and M Wood Working Co.

FIR plywood, a $400 million dollar annual industry now, had its birth in a modest box and drum factory in Portland, Ore., in 1905. The first panels "glued up" were for display at Portland's Lewis and Clark World's Fair Exposition.

Although records of those early days are meager, it is generally accepted that Peter Autzen and Gustav A. Carlson, co-owners of the Portland Manufacturing Co., and their plant superintendent and lathe expert, N. J. Bailey, originated the idea of panels made from fir.

First attempts at fir plywood were undertaken in the spring of 1905. The little factory had only crude equipment and tools. Bailey was the only one who had ever seen panels made. Work was slow and tedious. The veneer was peeled and then put out on a loading dock over the Willamette River for several weeks for drying. Additional drying was accomplished in an improvised steam kiln dryer.

The first glue was a smelly, highly-viscous material made from animal bones and hides, and "painted" on the veneer with a hand brush. Then, the panels were taken to a homemade press consisting of some heavy pieces of lumber at top and bottom. Pressure was applied to the panels with ordinary house jacks placed between the lumber and the roof of the factory. When the

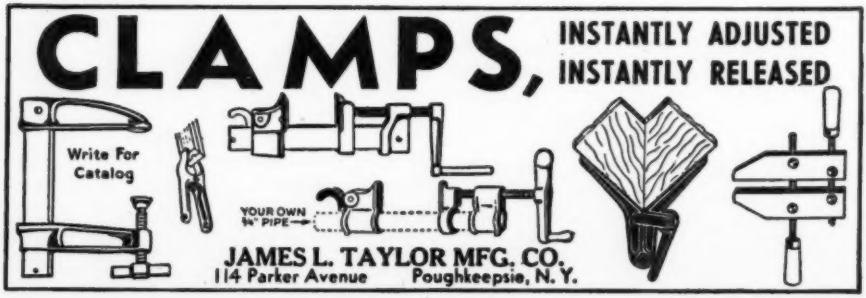
A raft of logs heading for the Portland Manufacturing Co. plant during the era in which fir plywood had its birth.

roof began to creak, the workmen figured the pressure was enough. The panels were left overnight to set.

The first fir plywood panels made a moderate hit at the Fair. There were inquiries from many visitors from the east and mid-west. Among them were some door manufacturers. Pacific Northwest door panel makers also showed interest. As a result, the first orders were placed. Within a few years, fir plywood became a dominant factor in the door business. Later, several plants were built to keep a steady supply of fir panels for doors.

In 1920, the first commercial plywood plant was built in Seattle—the first constructed independently of a door factory and to manufacture fir plywood for general sales on the open market. By then, fir plywood was selling to other markets including use in trunk and valise stock and for drawer bottoms.

From a handful of panels made as a novelty for a World's Fair, an industry was born. The historic Portland Manufacturing Co. still stands today, still makes fir plywood: a remarkable shrine to the vision of a few hardy and resourceful businessmen.



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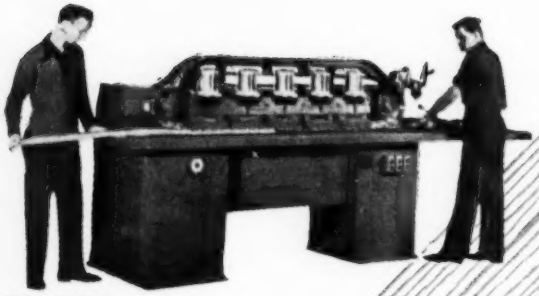

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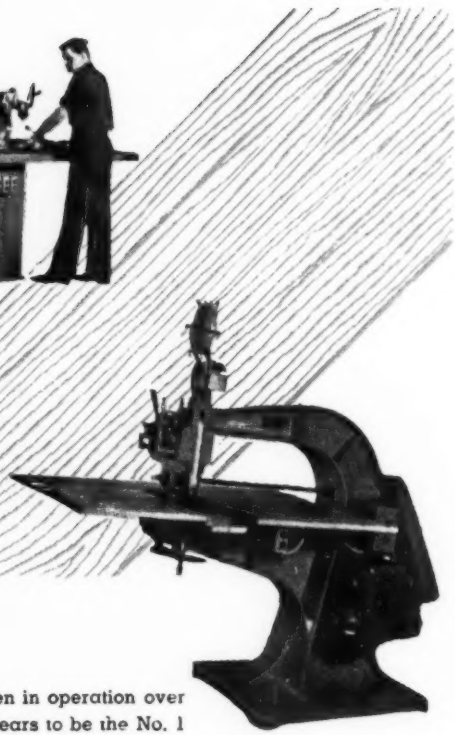

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MANUFACTURING

Fir Plywood

THERE is no more efficient way, discovered to date, to use the whole tree and obtain the greatest utilization of the raw material than to make plywood. In the last 50 years this technique of unwinding the tree and putting it back together again, has resulted in a spectacular industry. Current forecasts of future demand indicate that by 1970, that hypothetical pathway of one year's production would stretch from the earth to the moon!

Although veneering, the forerunner of plywood as we know it today, was practiced by the early Egyptians, the first fir plywood did not appear until 1905 when several experimental panels were displayed at the Lewis & Clark Exposition in Portland, Oregon. New machinery, new techniques and better adhesives have all played a part in the manufacture of plywood.

Here is the way plywood is being made today in some 100 plants in Washington, Oregon and California. Combined, these plants account for about two-thirds of all the nation's plywood. The growth of the industry has accelerated so fast that total output is measured in billions of square feet, sales in millions of dollars and the fir plywood labor force in thousands of people.

Peeling the Log

Douglas fir logs used for plywood are literally unwound or peeled against a keen cutting edge into a continuous sheet of wood. For this reason, the logs are called "peelers." They are cut into 8-10′ lengths called "peeler blocks" for the lathe by a dragsaw while still in the log pond, then brought into the mill for the first manufacturing process—barking.

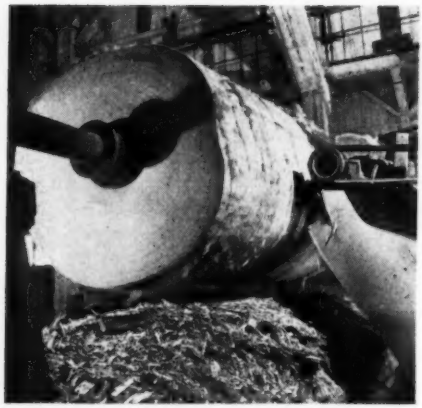
A high speed gouging wheel chews away the bark or outer covering of the log, down to the solid wood. The clean block is then dropped into the lathe. Here the block is rotated against a keen cutting edge which literally "unwinds" the log in a continuous strip of veneer. This is the process that produces the distinctive grain pattern visible in "rotary cut" fir plywood.

The continuous sheet of wood peeled off here is usually 1/10″ to 3/16″ thick. The sheet of wood comes away from the log much as paper is unwound from a roll. As the veneer leaves the lathe it is held temporarily in multi-decked storage trays 150′ or longer.

Complete Utilization

When the peeler block is cut down as far as the lathe will take it, some plants make 2 x 4's with what is left. Others cut the block in half and the two pieces are put into a smaller lathe where they are unwound further for sheets which form the crossbands of the panels.

At many plywood plants, the limited trimmings are fed into a chipper and



High speed gouging wheel rips away the outer surface of the log.

are utilized for hardboard or paper pulp. It's the old story of using all of the pig except the squeal "and they're working on a process for that." Some manufacturers even grind up the bark for glue filler.

Clipping and Drying

At the far end of the storage trays, a highly skilled "clipper man" operates a clipping machine that cuts the veneer into various sizes. The stream of veneer coming from the lathe must be cut into desired widths. The clipper man must cut out defective portions of veneer and get the maximum number of full sheets of veneer possible within the limitations of the quality of the material.

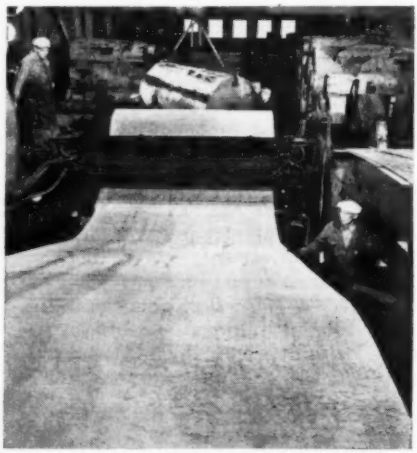
The next step is drying. After the "green-end" product has been sorted, it is fed into a 150′ steam heated oven which brings the moisture content of the wood down to a uniformly even low level—a carefully controlled prerequisite to a quality in the end product. From the dryer, the veneer is ready to go on to the gluing operation.

Panel Assembly

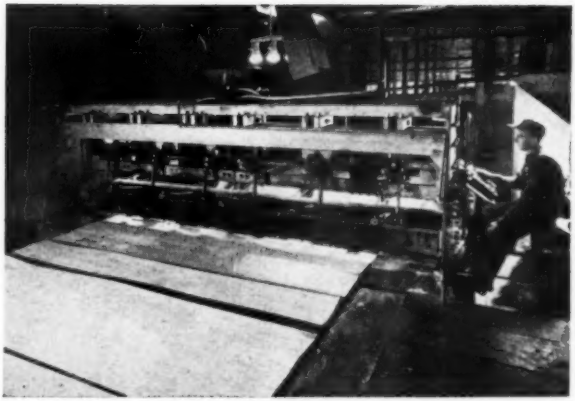
The veneer is graded. Some sheets are repaired if needed and others are edge-glued to provide for full size sheets. Various types of material going into the panel are then properly combined at the glue spreader.

All the parts of a glue spreader focus on two steel or rubber rollers similar to a washing machine wringer or the rollers on a modern rotary newspaper press. The rollers are bathed in a continuous flow of adhesive. As the dried and cut sheets of wood are fed through the rollers, glue is applied in uniform thickness on both sides. At the "out" end of the glue spreader, the actual panels are assembled with alternate dry sheets to form three, five or seven-ply panels.

In making exterior type fir plywood for boats and other outdoor uses, the panels are fed into an automatic press loader which inserts them in a giant hot press in one motion. Heat, supplied by steam pouring through the press platens, is applied together with great pressure to "cure" the phenolic resin adhesive used in this type of plywood. The hydraulic hot press cures the adhesive under temperatures of 260 to 285 degrees Fahrenheit and pressures



As the veneer leaves the lathe it is held in multi-decked storage trays 150′ or longer.



Clipper man must cut out defective portions of veneer and get maximum number of full size sheets possible.

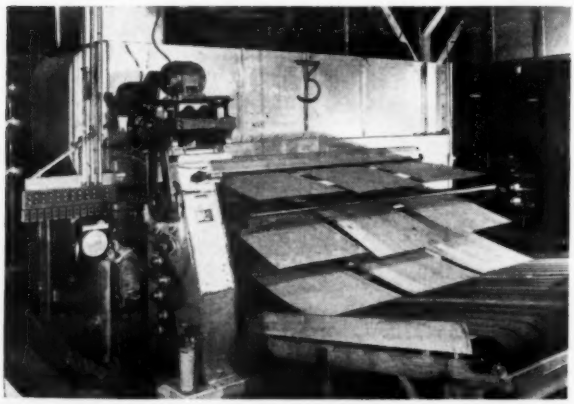
of about 200 pounds to the square inch. The heat and pressure produce an irreversible bond between the plys that is stronger than the wood itself.

The result is the rough panel which is trimmed to standard size, sanded smooth and graded for shipment. Each panel is stamped with registered grade-trademarks of the industry such as the edge-brand EXT-DFPA which means waterproof glue. Most panels are in the standard 4′ x 8′ sheets, but some lengths are scarf-joined to as great as 8′ x 40′.

Two Types of Fir Plywood

Fir plywood is produced in two types: Exterior with waterproof glue of the same quality as that used in plywood for boats, and interior which has a water resistant glue sufficient to withstand the usual wettings encountered during construction.

Several appearance grades are made within each type to fit various use needs. For example, there is a "one-side" grade of interior type fir plywood called Plypanel for use in cabinet work and paneling where only one side will show. The corresponding grade of exterior type for siding is Plyshield. For structural uses such as roof decking and sheathing, the industry makes



Full size sheets are shown emerging from a modern dryer.

Cross banding is fed by spreader man between steel or rubber rollers. At the "out" end, the sheets are assembled into panels.

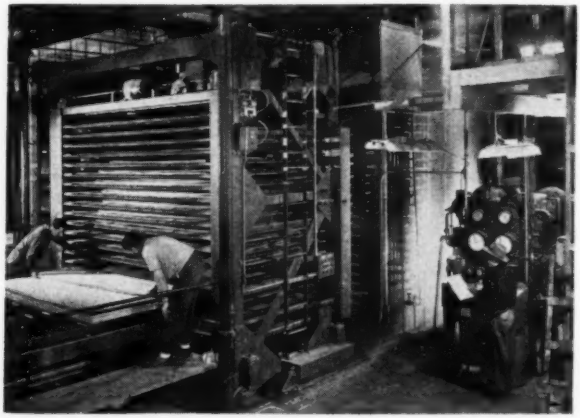
another unsanded lower appearance grade called Plyscord.

The manufacturers support two completely equipped testing laboratories through DFPA to assure consistent high quality of product. A corps of inspectors working out of these laboratories supervises quality maintenance and control through a systematic random-sampling test program. Almost half a million samples are tested yearly under this program. The samples are tortured to destruction to determine glueline durability—the key to quality in plywood. For acceptance, the wood fibers and NOT the glueline of the test specimens must separate, proving that the glue is stronger than the wood.

Boil-Bake Testing

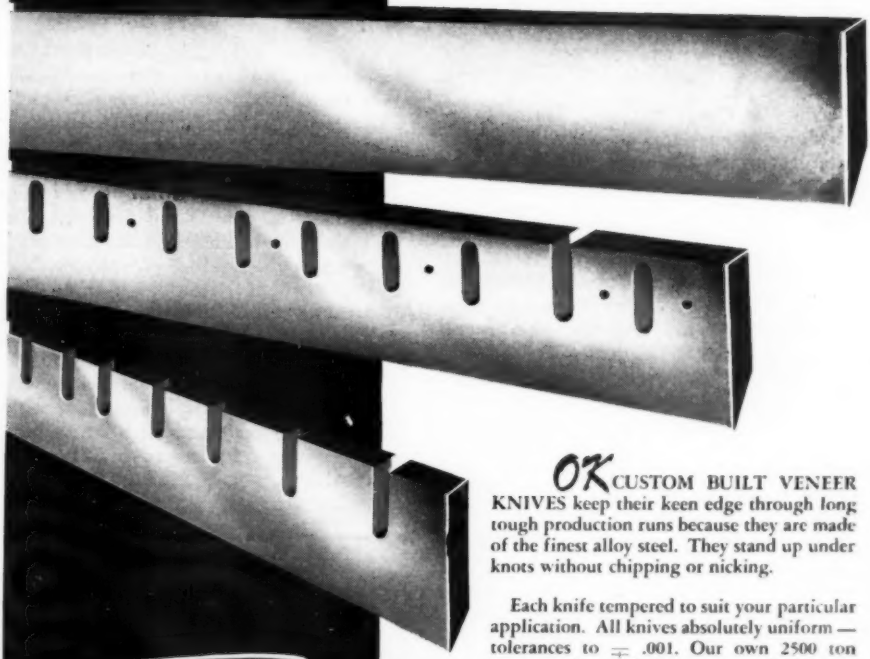
The test procedure of repeated boiling and baking has been proved tougher on the plywood than actual exposure to the weather. This was determined through placing of matching samples on an exposure fence without any protection from the elements. Field performance over 18 years has been correlated with laboratory test results.

It is the panels which pass DFPA's



Panels being fed into an automatic press loader which inserts them in a giant hot press in one motion.

you GO with OHIO GREEN



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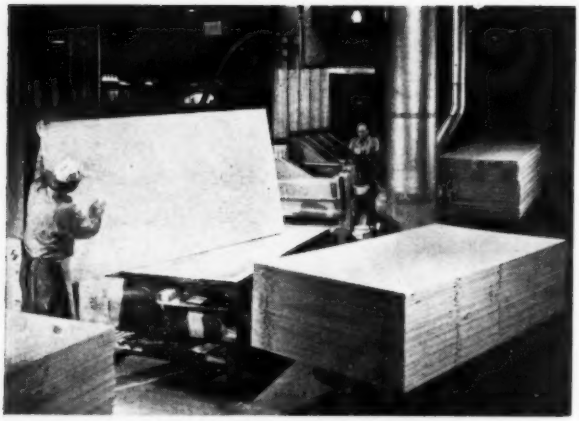

Under specially designed lighting to bring out any possible defects, panels are sanded smooth and graded.

inspection standards that are permitted to bear the quality grade trademarks.

Variety of Uses

There is hardly a home, a school, or a store in the nation in which fir plywood cannot be found—either in the structure, the cabinet work or the furniture. It rides the nation's rails in more than 100,000 railroad cars. It forms the hulls of hundreds of thousands of pleasure craft and goes to sea in tuna clippers, tugboats and the giant pontoons of floating drydocks. It is found in silos, cattle shelters and hog houses. Even metal products' manufacturers use it for plating tanks. Possible future applications for fir plywood are almost unlimited.

DFPA engineers already know that extreme cold near absolute zero gives a tremendous increase in strength to plywood. When man begins to exploit the Antarctic and the cold of space, plywood undoubtedly will go with him. Plywood's value in the Antarctic was proved during the Byrd expedition of 1939.

Growth Era

With the increase in diversity and number of applications, the plywood industry has grown. The first great period of expansion came during the late thirties, following development of the modern hot press. This made possible mass production of plywood with completely waterproof gluelines. It opened scores of new markets.

Since 1938, the number of plants has more than tripled and output has kept well ahead of that. Total production in 1954 was 3.9 billion feet figured on a ⅜" rough basis. This year production is expected to reach 4.4 billion feet, more than three times the production in the first year of peace following World War II.

Because plywood is assembled with the grain of each ply running at right angles to adjacent plys, the panels have great rigidity and strength. They are light in weight, splitproof, virtually puncture proof and dimensionally stable.

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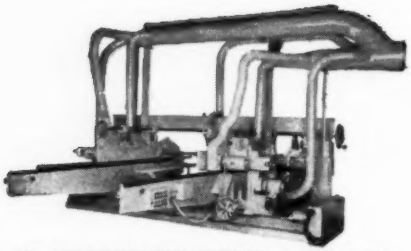
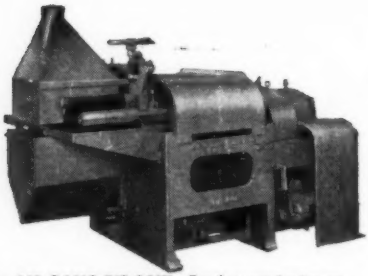
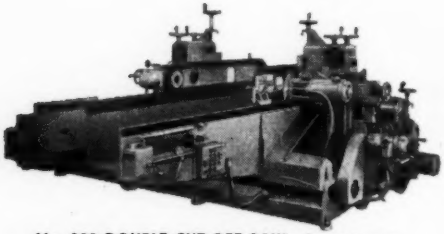


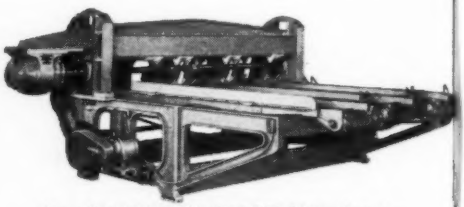
No. 400 DOUBLE-END TENONER—Sizes up to 20' to fit your requirements. Will square-cut up to 96" ahead of trim saws. Several accessories to multiply its usefulness. *Ask for Bulletin No. 400.*



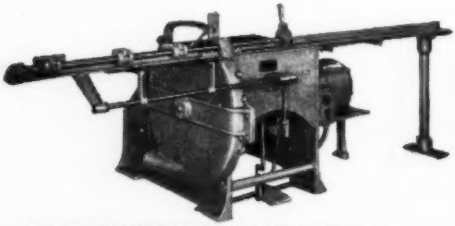
No. 441 GANG RIP SAW—For fast production on the most difficult gang ripping jobs. Six power driven feed rolls...12", 19" or 24" saw space...up to 125 HP . . . variable feed drive up to 300 ft. per minute . . . glue joint accuracy. *Ask for Bulletin No. 441.*



No. 300 DOUBLE CUT-OFF SAW—Accurate production at high rates of feed. Labor saving attachments such as cope motors, dado arbors and other devices are available for specific needs. *Ask for Bulletin No. 300.*

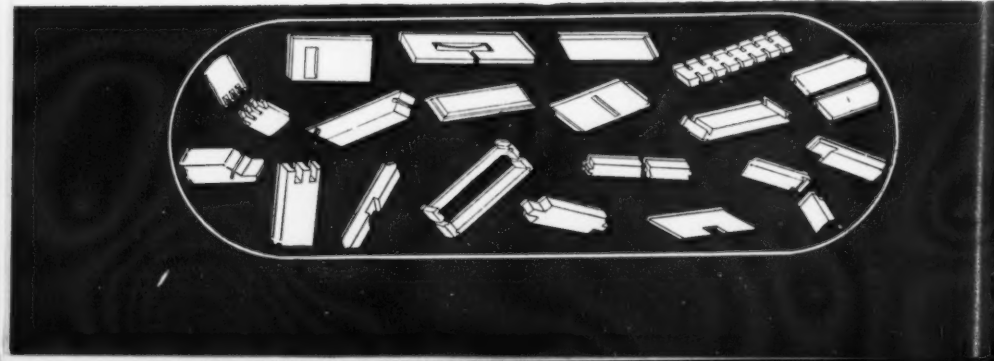


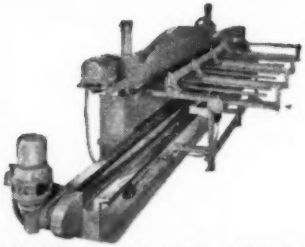
No. 435-H MULTIPLE CUT-OFF SAW—Cuts long boards into short pieces . . . will square cut large size sheets . . . and will cut any number of grooves. It's an excellent plywood sizer. *Ask for Bulletin No. 435-H.*



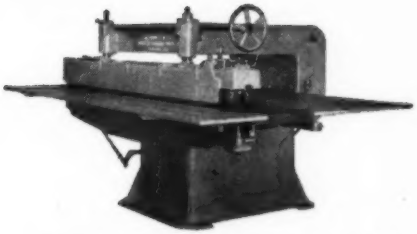
No. 477 CUT-OFF SAW—Capacity equals two or three swing, straight line or roller carriage cut-off saws—depending on the type and condition of the stock. Excellent for box work. *Ask for Bulletin No. 477*

No. 442-MT COMBINATION SAW—Versatile machine for ripping, cross cutting, grooving, dadoing, beveling, mitering. Cuts up to 48" wide and rips up to 50" wide. Easily handles large stock. *Ask for Bulletin No 442-MT*





VENEER JOINTER—Traveling head principle eliminates shifting. No chain feed—no "stock wobble". Perfectly joints bundles of veneer up to four inches thick. Sizes from 90" to 212". *Ask for the Jointer Bulletin.*



VENEER SPLICER—Makes precision tapeless joints. Adjusts itself automatically for varying thickness of veneer normally encountered. Welded steel frame with 49" throat clearance at right. *Ask for Bulletin No. 50.*

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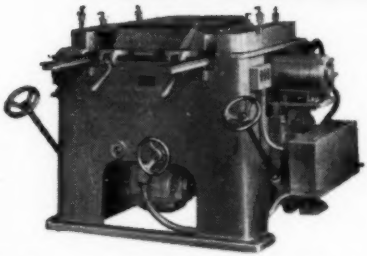
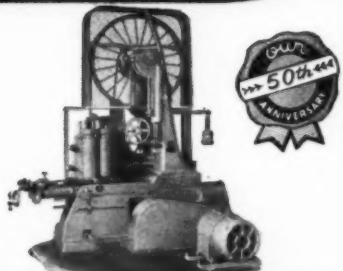


No. 326 MATCHER-JOINTER—For sash and door, furniture and box factories—as well as many special uses. Adaptable for jointing hogshead staves. Unequalled for "T" and "G" work. *Ask for Bulletin No. 326.*



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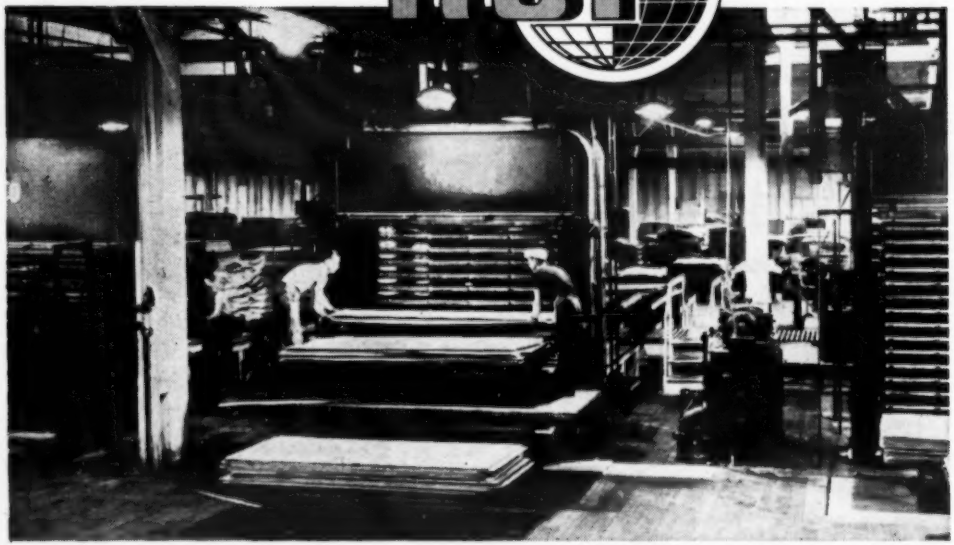

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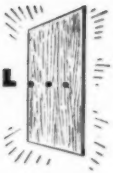

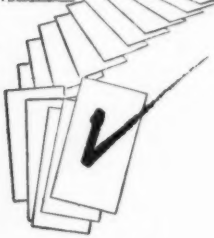

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PLYWOOD JUBILEE

WESTERN fir plywood manufacturers will mark their 50th anniversary with an all-industry meeting in Portland, Ore., June 20 and 21 that will highlight the most bold and dramatic industry-wide sales promotion they have ever attempted.

The June meeting, while it commemorates half a century of industry progress and accomplishment since the first fir plywood was manufactured in 1905, is only one phase of a year-long $2.5 million Golden Jubilee promotional effort intended to focus national attention on the idea that "You Can Build Anything With Fir Plywood," the 1955 promotion theme.

The core of the program is the development of new ideas for plywood use in residential construction and design. Tagged as the Golden Ideas, they are intended to dramatize for professional architects and designers the unlimited possibilities in design technique with fir plywood. Already there is every indication that they will influence building trends in this country for years to come.

To get them, Douglas Fir Plywood Association which administers the industry's promotion program, commissioned five top-flight architects and designers on an open assignment without strings of any kind to do the job.

The annual meeting will be used as the starting point for a publicity, advertising and merchandising campaign keyed to the Golden Ideas that should pay off at the market place over a substantial period of time. They will be dramatized in special settings at the meeting with every possible medium of theater and display.

This lavish exposition of the Golden Ideas is part of the over-all 1955 promotion which is intended to spark sales of an additional 10 million feet of plywood a week. Sales are already more than 20% ahead of 1954 and the industry looks forward to another all-

Fifty Golden ideas for fir plywood designed by the nation's top-flight architects will keynote the "Golden Jubilee." Shown here in conference with Douglas Fir Plywood Association officials are: Chris Choate, Robert Anshen, John Campbell, W. E. Difford, managing director of DFPA, A. Quincy Jones Whitney Smith and Joseph Weston, DFPA field promotion director.

time record annual output of 4.4 billion feet this year.

The campaign is in addition to continuing basic sales promotion on behalf of fir plywood to all major markets through every possible medium.

"The Jubilee promotion," says W. E. Difford, managing director of DFPA and the driving force behind the industry's joint promotion efforts, "has only one basic aim—to sell plywood. Our own activity has stimulated many allied industries and concerns to join us in promoting fir plywood as an all-purpose basic building material. The cumulative effect of all this should be tremendous."

The Golden Ideas range all the way from new structural concepts that exploit the special physical properties of fir plywood to imaginative new home craft projects. However, the series is in no sense a do-it yourself promotion. Says Joseph Weston, association field promotion director, an architect and the man in charge:

"The whole thing is intended to stimulate the imagination of professional designers and to start them thinking about the unlimited design possibilities in this material. To do that we have given each architect an absolutely free hand unfettered by commercial consideration, to come up with anything that makes good design sense.

"This way we hope to get out ahead of current trends. We are relying entirely on the proven creative ability of the architects. Although some of the material is somewhat 'avant garde', I am confident it will have a long term continuing effect on plywood use for many years."

The designs will include several highly creative approaches to structural roof and wall panels, one of which utilizes a curved plywood surface to achieve greater strength integrated with structure. One of the architects has produced an entirely new concept in architectural ornamentation with fir plywood that has limitless design possibilities in residential and commercial construction, in display and in the creative design field.

Another has introduced a method of handling fir plywood that could well be another medium of the fine arts.

The designs include several built-in storage and furniture ideas that are revolutionary but practical for the minimum small house. There are design

(Continued on page 86)

Jubilee Program

SUNDAY, JUNE 19

Registration and Information Center
Multnomah Hotel Rose Bowl — 10:00 a.m. to 10:00 p.m.

Golf Tournament
Royal Oak Golf Course, Vancouver — 11:00 a.m.

MONDAY, JUNE 20

Registration and Information Center
Multnomah Hotel Rose Bowl — 8:00 a.m. to 7:00 p.m.

Golfers' Breakfast
Multnomah Hotel, Marine Room — 8:00 a.m. to 10:00 a.m.

D.F.P.A. Business Session

Multnomah Hotel - Junior Ballroom — 10:30 a.m. to 12:00 noon
D.F.P.A. Members only

Jubilee Luncheons

Multnomah Hotel - Grand Ballroom
Ladies - Rose Bowl — 12:30 p.m. to 2:00 p.m.

Cocktail Hour

Multnomah Hotel — 5:30 p.m. to 7:00 p.m.
Cocktail party honoring the jobbers in attendance at the meeting.

Jubilee Theatre

Benson High School — 8:30 p.m. to 11:00 p.m.
"The Plywood Age" will be given at the auditorium of the Benson High School. This is a two-hour dramatization of plywood of the last 50 years, with a quick look into the future. Open to registered guests and a select list of Portland people.

TUESDAY, JUNE 21

Presidents' Breakfast
Multnomah Hotel - Junior Ballroom — 8:00 a.m. to 10:00 a.m.

Golden Jubilee Forum
Multnomah Hotel, Grand Ballroom — 10:30 a.m. to 12:30 p.m.

Luncheon
Multnomah Hotel - Rose Bowl — 12:30 p.m. to 2:00 p.m.
Speakers of National Importance

Golden Jubilee Exposition

Portland Armory — 2:30 p.m.
A stupendous, spectacular presentation of the Fifty Golden Ideas for new uses, new products, new developments . . . a new view of the future for fir plywood.

Cocktail Hour

Columbia Athletic Club 5:30 p. m. to 7:00 p. m.

All registrants will be the guests of the glue manufacturers serving the Douglas fir plywood industry.

Banquet

Columbia Athletic Club 7:30 p. m. to 9:00 p. m.

Banquet for members and invited guests. There will be one speaker at this banquet of outstanding stature and reputation, preceded by introduction of celebrities who are being invited to join us for our Annual Banquet.

Golden Jubilee Grand Ball

Columbia Athletic Club 9:30 p. m. to 1:00 a. m.

Many of the actors from the stage play "The Plywood Age" will lead us in some unusual festivities.

---

suggestions for utilizing edge-grain plywood—one in floors and another in handsome free-floating slabs for tables and counters.

The architects have come up with several creative solutions to the problem of screening living areas, wardrobe storage areas and outdoor living areas.

At the same time, they have utilized plywood in a number of ways to integrate lighting with the structure and architecture of the house, one of the most challenging current design problems faced by leading architects throughout the country.

Most of the designs will be displayed at the meeting in one of two contexts—theater or exposition hall. The first will be a pageant of fir plywood in the form of a Broadway show. The second will be an exposition incorporating many of the design ideas with a graphic display intended to provide a glimpse into the wonders of the future.

The show is intended as pure entertainment. It is being produced by Horace Robinson, a man with an international reputation in the world of the theater, has made a name for himself with his production of historical pageants and theatrical cavalcades dramatizing the development of the West.

He has prepared a production that is pure theater without concession to commercial appeals. The show has its own score with an original orchestral suite.

The exposition and the pageant are the two highlights of the meeting. Although an annual meeting is traditional in the plywood industry, this will be the first time it has been opened to the press. Also for the first time, industry suppliers and representatives of the industry's distribution elements—jobbers and distributors—have been invited to participate.

Over and above the promotion material that will come out of the show, the Jubilee event is expected to arouse tremendous enthusiasm for plywood in the trade and it is planned as an integral part of the continuing effort to broaden plywood uses.

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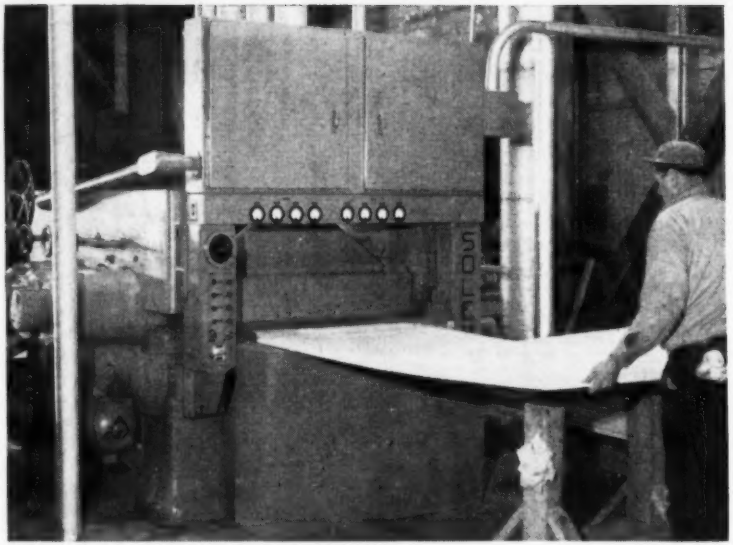
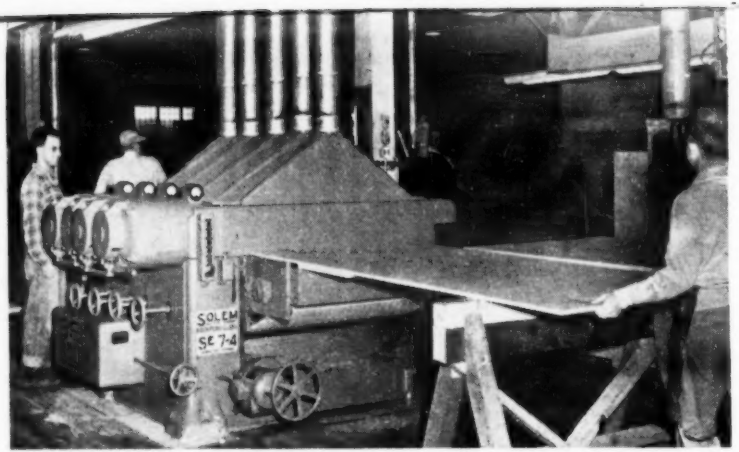


The highly-favored Solem double-deck eight-drum sander is seen to the left, operating in a large fir plywood plant in Oregon. If your operation is one where ultra-high production on Douglas fir or other softwood plywood or dimension is the dominant requirement, this is the unit you need. You get safe operation, high production and a high-quality sanded finish. Each drum motor is push-button controlled. Ammeters show the sanding load on each drum.

Plywood, furniture and millwork manufacturers are sold on Solem sanders for many good reasons. High rate of sanding production achieved and extremely low maintenance cost involved are among dominant factors. The eight-drum is the prime favorite among double-decks, although Solem builds a six-drum double-deck for those who desire it. The Solem four-drum has the greatest popularity among the endless-bed models, although three-drum and two-drum endless-bed machines are also available. Any of the endless-bed machines may be had in many different widths. They are used for every type of drum-sanding duty, including the sanding of hardwood plywood with relatively-thin faces, as seen in the picture below.

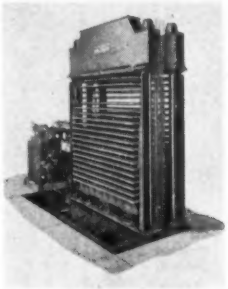
ONE AND TWO SIDE SOLEM SANDERS GREATLY REDUCE PRODUCTION COSTS.

To the left is seen the highly-efficient Solem four-drum endless-bed sander operating on hardwood plywood with thin faces at Associated Plywood Division of U. S. Plywood

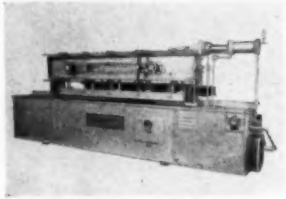


To the left is seen the highly-efficient Solem four-drum endless-bed sander operating on hardwood plywood with thin faces at Associated Plywood Division of U. S. Plywood, Willimina, Oregon.

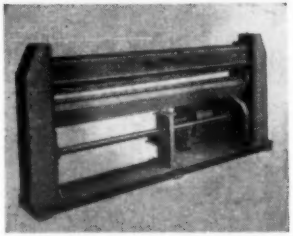
Solem's affiliate, Merritt-Solem Division at Lockport, N.Y., provide other cost-saving machines shown below.



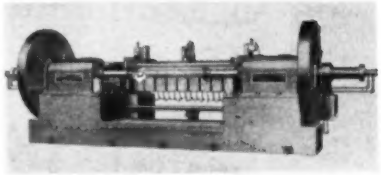
PLYWOOD PRESSES



TRAVELING HEAD
VENEER JOINTERS



PRODUCTION VENEER CLIPPERS



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Fir Plywood Applications

This article describes at least 25 industrial uses for fir plywood. Before you begin to read the article, see how many uses you can count up. Of course, there are many more uses than these we have described and pictured for you here.

TAKE a 4' x 8' standard panel of fir plywood as it comes off the mill line at a West Coast manufacturing plant. There it is: a piece of material with a surface of natural wood grain, dimensionally stable because of cross bonding.

To how many uses can you put that panel and what are the advantages of using it in those places?

You're in for a surprise.

Versatile is the word best describing that standard panel. People who use fir plywood every day—in one or two applications—often don't realize just how versatile this material actually is.

Pull a dollar bill out of your pocket. Chances are that bill was "cured" in one of the plywood humidors which are saving the U.S. treasury a million dollars annually in the drying of printed money.

Look at the set in the next movie you attend. You may think you're looking at a real wrought iron grill, Louis XV furniture, a store front, an 1850 Russian gunboat, steel I-beams. But most likely those things came out of the studio prop department and were made—all of them—from fir plywood. It's even more likely that the camera which photographed the movie rode on a base leveled with fir plywood and that plywood's acoustical properties figured in the construction of the studio sets and that the film came to your theatre in a plywood box!

The next time you look at a new home tract, pause and consider that fir plywood may be going into that construction in more than 15 distinct and separate places, effecting major savings or imparting special structural values. You can see new freeway overpasses, new apartment buildings, new factories where plywood used for concrete forms brought a big saving and produced walls of smooth surface continuity.

Are you beginning to see that standard panel of fir plywood in a new light? Here are some of the places where fir plywood is being used every day and

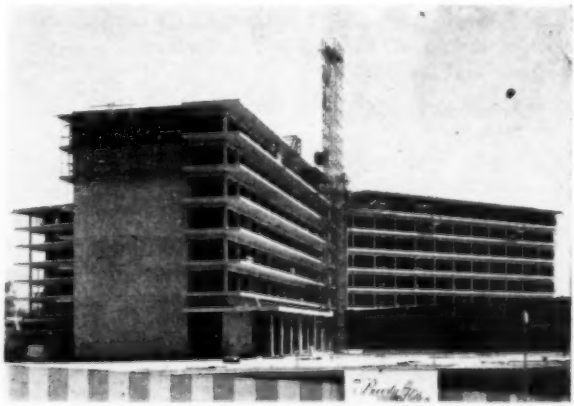
Here's an ocean-going tuna clipper in which fir plywood — 10,000 square feet of it—played a part. Plywood was used for bait tanks, canopies, rails, superstructures and interior fixtures.

the reasons why. Keep in mind that these are only some of the uses.

In California, designer Cliff May and his partner, architect Chris Choate, have built plywood into a packaged-panel system which cuts at least $1000 off the market price of handsome ranch style homes. Plywood effects only part of the saving in this plan. In ⅜" thickness it goes into roof sheathing and overhangs with the partners saying they have less waste, easier packaging, and a one-third saving in application time.

A veteran New Jersey builder, Fred Brunetti, reports savings of $32 per unit in carpenter's time—one full day off construction time for each house—through use of fir plywood wall sheathing. He said he saved $1920 in the sheathing on one 6-home project of 3-bedroom split-level units at Glen Rock, N.J. All have fir plywood siding and sheathing. Brunetti makes a big sales point out of the extra strength imparted by plywood and lower cost to consumer through this construction method.

Continental Construction Company, Seattle, Wash., is cutting costs $500 per home through cumulative savings based on a new fir plywood floor construc-



Smooth concrete walls of this new Southern California hotel were formed against fir plywood. Re-uses were actually limited only by the care used on forms between pours.

Roof decking and overhangs in this ranch home designed by Cliff May and Christ Choate are fir plywood.

tion. One inch fir plywood functions as a combination subfloor and underlayment over supports 48 inches on center. Here's how it adds up:

1. The plywood subfloors are only tacked in place at first, can be lifted. Therefore, plumbing and heating subcontractors save time and have cut at least $30 each from their contracts.

2. In-place cost of floor reduced an estimated $78.

3. Elimination of concrete steps and landings in three places—a saving of $90 in time and materials.

4. Lowering of wall height at least 12"—a saving of about $40 per house in time and materials.

5. Contingent savings in the painting contract.

6. Time and material economies through less staging and faster finishing of outside trim—primarily due to lower wall height.

7. No need for insulation around warm air pipes and no framing around cold air vents—both required in conventional designs—both savings provided by the under house crawl space peculiar to this system.

In Mason City, Iowa, general contractors G. E. Platts & Sons report a price reduction of $1500 to $2000 per home through a three-step design-building system based largely on fir plywood. They are using a flat-top design with Texture One-Eleven, newest product of the fir plywood industry, as combined sheathing-siding. The T 1-11, which imparts a rustic vertical shadow-line effect to the walls, is saving an

This is a government printing office. The box is built of fir plywood and used to dry out newly printed money.

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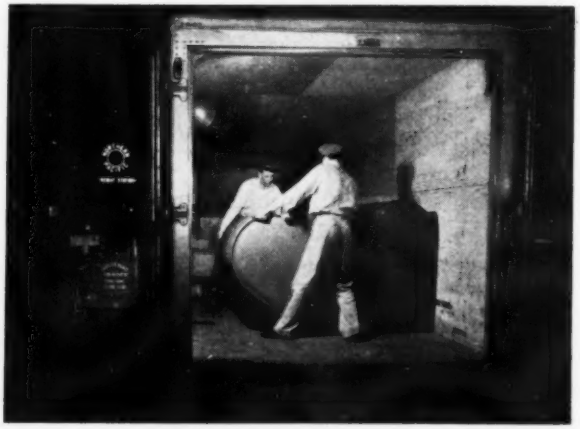
Industrial templates of fir plywood hold their shape, are lightweight and easy to handle, store and cut out. They lend themselves to the odd shapes and angles often required in this field.

estimated $375 per home, the Platts say. Additional savings come through built-up fir plywood ceiling beams spaced 4' on centers used in conjunction with rigid insulated roof sheathing exposed on the under side. They also have a simple design with all possible parts of the house pre-cut at the mill before going to the job site.

In addition to what the builders are doing with plywood, there are uncounted industrial areas which have been taken over by these versatile panels.

Consider the example of mock-ups. Plywood's big panel size, ease of fastening, lightweight-for-strength ratio, smooth finish and suitability for contour work render it nearly perfect in this field. These mock-ups range from full-scale models of giant air transports to scaled-down models of geographical contours such as the one helping in the engineering planning for the St. Lawrence Sea-Way.

Plywood boxes and general containers serve many industries. Bulk seed processors have found it ideal for boxes that will not contaminate or co-mingle various kinds of seeds. Plywood tobacco



The long-haul truck-trailer is lined with fir plywood because they are durable in the rough wear and tear of this industry.

hogsheads have virtually revolutionized one phase of that industry. They are collapsible, re-usable, lighter, longer-lasting, easier to store, simple in construction, durable; they've almost eliminated the big cooperage shops of the industry: ten men now handle work that once required 300.

Plywood templates for industrial pattern work use of vast quantities of the panels. Such templates are easy to cut out and store, are lightweight and simple to handle, retain their shape. This dimensional stability of plywood suits it also to cutting dies for carton manufacturers.

Inside a manufacturing plant, you can see fir plywood ducts and hoods to carry away harmful fumes and dust, durable plywood bins and flow chutes to operators of automatic machinery, sorting and packaging tables, dip tanks for protective finishes, electroplating cells and soaking vats for caustic chemicals.

The transportation industry has found plywood ideal for everything from renewing old railroad boxcars and building new refrigerator truck trailers to forming the basis for eight-way loading pallets that will stand up under hard usage.

Electroplating cells of resin overlaid fir plywood were constructed at a saving of 80% compared with rubber-lined steel, 50% compared with lumber.

Commercial boats for the fishing industry—ranging from little tuna tenders and Bristol Bay gill netters to big tuna clippers—are being built almost entirely of fir plywood. Many areas of marine activity have learned to depend on the waterproof glueline of exterior fir plywood. The panels are used in everything from navy minesweepers, giant floating drydocks and mooring floats to do-it-yourself pre-packaged boat kits.

Traffic control and warning signs of fir plywood. Here are only a few. These signs won't chip and rust and can't be wrapped around the post by vandals.

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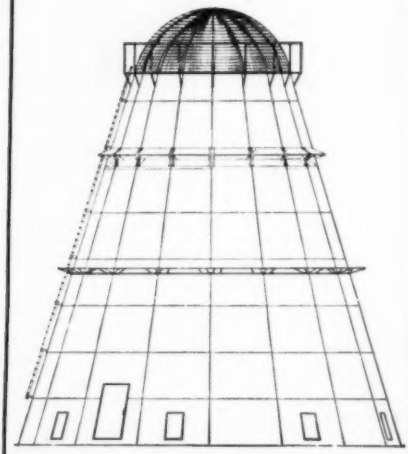

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A specialty product of the plywood industry—resin fiber overlaid—has been saving money and headaches in another field: traffic warning and control signs. Several states and cities around the nation have compiled impressive statistics to show that plywood signs have sharply reduced the cost of replacement and general upkeep. According to the traffic engineer in one city, the plywood signs have two important advantages: vandals can't wrap them around the post and they don't chip or rust when struck by rocks and bullets.

As a result, several of these states and cities have been replacing their existing signs with the resin overlaid plywood signs. Plywood is no newcomer in this field. The state of Oregon has used standard panel for all state highway signs over 7-13" wide for about 15 years. Wisconsin, which began experiments with plywood signs in the early thirties, made a complete changeover to plywood during World War II.

You should now have an idea of the versatility built into those standard panels of fir plywood. We leave you with this thought: the next time you go out for an Italian dinner, pause if you can with the spaghetti or macaroni at half mast and consider this thought—that delicious stuff is dried in big sliding-rack boxes. Many of those boxes are built of . . . fir plywood.

A young couple of our acquaintance struck up a friendship with an Australian lady. On the arrival of her fourth child, they sent her a playpen as a gift. The thank you note left them somewhat astonished: "Thank you so much for the pen. It is a perfect godsend. I sit in it every afternoon and read and the children can't get near me."

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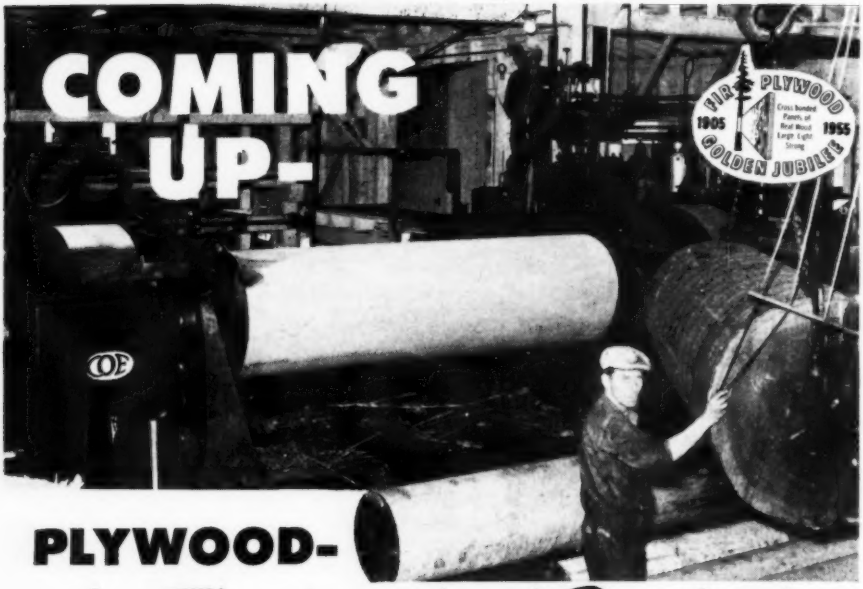

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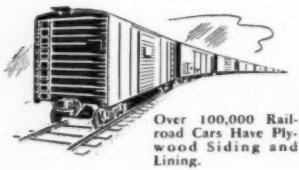

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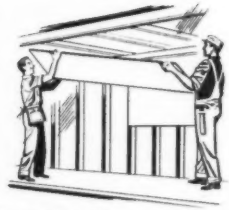

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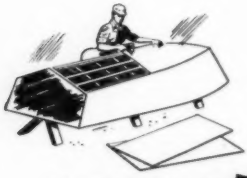

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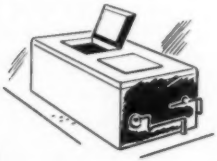

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History of Douglas Fir Plywood Association

A COLD shoulder which proved to be historic and a federal law which turned out to be unconstitutional were two incongruous ingredients which went into the recipe which developed a successful trade-wide sales promotion program for western fir plywood manufacturers.

Like the industry itself, beginnings of the association which now represents plywood mills manufacturing 85% of all fir plywood production, were humble. There were many false starts, and early attempts to set up a lasting industry-wide organization met with failure after failure.

It was on the heels of these failures and in the face of falling markets that the present DFPA was launched with W. E. Difford as its managing director. This year, the Golden Jubilee of fir plywood, the fir plywood association is busy administering a $2.5 million promotion and advertising program designed to increase plywood sales throughout the nation.

Fir plywood was first manufactured in 1905 at Portland, Ore. Its first markets were to door factories and for trunk and valise stock. By 1924 automobile manufacturers had found plywood suitable for use in floor and running boards. Ten plants were operating in Washington and Oregon. There were rumblings, even in that early day, that an industry gaining such stature should have its own trade-wide sales promotion program.

In June of 1924, an eastern organization composed of hardwood manufacturers met in Chicago and considered a proposal which would admit western fir panel makers. The idea was voted down and the westerners, angered at this rebuff, responded by forming the Pacific Coast Plywood Manufacturers' Association. After several meetings during which little was accomplished PCPMA died of inactivity. Three years later, another attempt was made in Portland but this, too, had a short and uneventful life span.

In 1928, Portland Manufacturing Co., Elliott Bay Mill Co. of Seattle, Walton Veneer Co. of Everett and Washington Veneer Co. of Olympia, organized to operate a joint sales program. This same year, the Fir Door Institute began functioning in Tacoma, Wash. and hired Oscar Mason, a veteran of Portland Manufacturing Co. as the industry's first mill inspector. Neither accomplished much at the time, although the Fir Door Institute managed to stay alive.

A new Douglas Fir Plywood Manufacturers' Association was formed in 1930 with Gus Bartells, general manager of Elliott Bay Mill Co., as director. This group was enlarged at a meeting in Centralia, Wash. in January of 1932 and Harrison Clark was named secretary. The grim, dark days of the depression were upon the plywood industry as well as the rest of the nation and Bartells and Clark found few willing

Eberly Thompson

W. E. Difford

Gus Bartells

E. W. Daniels

to spend the money on sales promotion —if they had the money to spend. This group also fell by the wayside.

However, Clark and William Penman, a Seattle advertising man, kept going on their own. They published a promotion magazine called "The Plywood Promotor" and sent it to jobbers and dealers throughout the nation. Frequently, they worked without pay. It was hard enough to get money for stamps to mail "The Promotor."

The spring of 1933 saw fir plywood at its lowest ebb. Franklin D. Roosevelt was sworn as president and began a series of dramatic moves to inject life into the nation's economy. He had passed by Congress the National Recovery Act which set up legislation to govern all industries.

In May, 1933, western fir plywood manufacturers met at Portland with Philip Garland of Oregon-Washington Plywood Co. temporarily presiding. He put the matter squarely up to the plywood men. Either they organize or the government would do it for them. A month of industry talks ensued. On June 13, 1933, the Douglas Fir Plywood Association was incorporated with Henry McCleary, president; E. Q. Walton, first vice-president; Garland, treasurer; and Harrison Clark, secretary. The association voted some funds for organization and promotion but not nearly enough to do the job. And government controls were not avoided. Under the NRA, the western plywood industry was forced to operate under government boards for many months before the act was declared unconstitutional by the United States Supreme Court. Though the act was made invalid in 1935, it had performed one notable achievement; it had brought plywood manufacturers together.

DFPA languished in its own inertia for the next two years. Axel Oxholm, director of Pacific Forest Industries, was named managing director for DFPA in February, 1937, and immediately

started on a trip around the world to find new markets. Frost Snyder of Vancouver Plywood Co. was president of the association that year. Production staggered to 725,000,000 feet in 21 plants, not nearly enough, the industry agreed. A waterproof glueline, developed in 1935, was still not being touted as the major development it actually was. Sales of exterior type plywood were gaining but the gains were painfully slow.

In November 1937, association members met at the Pacific Beach Hotel, Pacific Beach, Wash., determined to find an answer to their problems. They voted funds for sales promotion and wrote a subscription contract under which each mill would pay into the association a certain amount for each 1,000 feet of production. Then, DFPA cast about for a super-salesman to act as managing director.

The man it found was W. E. Difford, who had built a fabulous reputation in the south and mid-west as the "Doctor of Sick Industries." Difford was then making a survey for the Fir Door Institute on nationwide market conditions. His penetrating analysis of the ills of the door business appealed to association members. Herman Tenzler, president of Northwest Door Co. and Phil Simpson of the Buffelen Manufacturing Co. brought Difford before the association. He was hired in March of 1938.

From the moment Difford stepped to the helm, sales boomed across the nation. He brought with him a new concept of promotion, pinpointing glueline performance instead of face panel appearance as the true guide to plywood quality. He appointed technicians to study the characteristics of plywood so he would be on firm ground when he talked plywood. He placed trained technicians into the field to talk plywood—"salesmen without order books."

Mfd. under Process Patent No. 2,261,497, and Lathe Apparatus Patent No. 2,397,110.

The most modern methods, equipment, and techniques are used in our new plant for manufacturing door stock in all thicknesses. Investigate our service and complete facilities now!

HIGHEST QUALITY . . .
OAK, — MAPLE — POPLAR,
SILVER ELM & WALNUT
SLICED AND ROTARY CUT
VENEER (In Single Ply Only)

HILL BROTHERS
VENEER COMPANY, INC.
EDINBURG, INDIANA

He set up a publicity department to write stories and lay out advertising for both trade and consumer magazines and newspapers all over the country. When Difford came to DFPA he set his goal and promised the industry a full order file. In 1939, just one year later, he kept his promise and achieved the goal. To this date, the fir plywood industry has had a full order file. The bold program of 1938 has been extended and enlarged. It takes the plywood story to the architect, the builder, the do-it-yourselfer and the farmer. Eight separate departments of DFPA promote plywood and its advantages to anyone who might be a specifier of building materials.

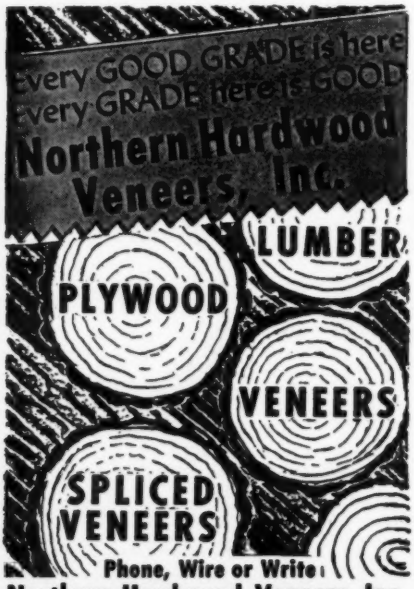
Here are just a few of DFPA's department activities:

Quality Control—Glueline testing at two modern laboratories, production supervision and special studies such as how exterior type plywood fares under all weather conditions.

Field Promotion—The "salesmen without order books" call on dealers, jobbers, builders, architects, municipal code officials, county agents, government officials, and others; they meet with sales people, show plywood movies and explain the product. They make market and sales studies and keep minute field data.

Engineering and Research—Product and research to supply technical data and work with city, county, state and federal code and standard officials to correlate plywood qualities with the laws and regulations of these groups.

Publicity and Advertising—Advertising to consumer and trade publications; stories to hundreds of magazines in both these fields; radio, TV, newspapers and trade journals are supplied with a constant flow of plywood news.



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A handy book of accurate tables for quickly determining square feet contents of veneer and the cubic contents of logs, complete to fractional units.

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These are just a few. Merchandising experts provide materials for jobbers and dealers; an allied products department specializes in new products such as Texture One-Eleven, plyron and others; a statistics and accounting department computes a weekly barometer of production, new orders, sales, and conducts cost studies and production audits, and a traffic department audits freight bills, handles rate adjustments, overcharges and damage claims and works for less damage in shipment.

This bustling organization operates through W. E. Difford, managing director, and a management committee

"The Boss will be coming through soon, Pete—Mind if I borrow some of your sawdust?"

headed by E. W. Daniels, chairman. Other members of Daniels' committee are Victor Olson, H. B. Garrison, Hal W. McCleary, B. V. Hancock, Frost Snyder, Arnold Koutonen, Leonard Nystrom, A. W. Agnew, Eberly Thompson, president of the association, and Dr. O. Harry Schrader, Jr. Garrison is vice-president, R. A. Neumann, secretary, and Arthur Berggren, treasurer, and a board of trustees is formed of Robert Beggs, F. L. Foval, Monford Orloff and George Jaynes.

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Most Complete Line of Floor Trucks in America

Figure 321—Lumber Buggy. Large wide tread wheels for outdoor as well as indoor use.

Figure A—Balance style for turning sharp corners. Variety of superstructures and wheel sizes.

Figure 1191—Timber Dolly. Used as a dolly or, inverted as a portable roller.

Figure 2419 and 421—

Jacks and Skids. Stores and transports materials with one-time handling. One Jack services many Skids.

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Modern occasional furniture made by the Kaufman Furniture Co., Collingwood, Ontario, combines the lasting protection of plastic surface with the quality of skilled craftsmanship. WOOD-LOK, National's cold run, ready-for-use resin glue, is used for a variety of the laminating and gluing operations.

modern methods...with Wood-Lok

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WOOD-LOK dowel joints are the strongest possible type, as proved by an independent three year accelerated aging test. In dowelling, an open assembly time of 5-7 minutes prevents chilled joints. No heating is necessary.

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WOOD-LOK securely laminates plastic or pressed board in only 20-30 minutes. Presses can be emptied in time for reloading without bar clamping and handling of heavy clamped up stacks. The process is simple and continuous.

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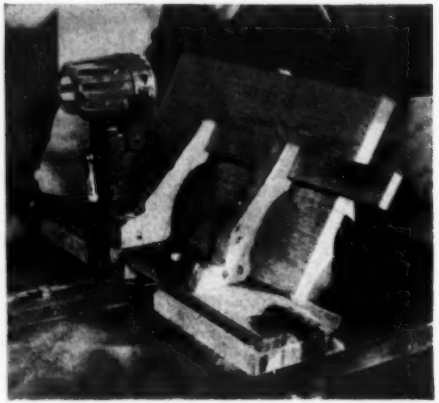
WOOD-LOK produces handling bonds in 20-30 minutes press time and reaches machining strength ONE hour later. Machining is continuous, without the delay of long curing times. Auxiliary jig is adjustable for varied operations.



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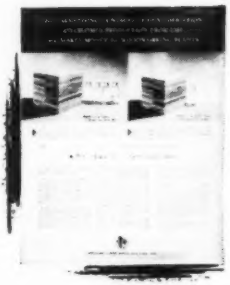
Wal, things were different in Grandpa's day. Air didn't get as dry in his plant because it wasn't as well heated and there weren't as many air changes; gluing wasn't as dependent on wood moisture content, and he never heard of high temperature drying.

Humidification in modern woodworking plants is a *necessity* to prevent stock losses, glued joint failures and poor finishes . . . and there is no better method of humidifying than using guaranteed, automatic Armstrong Steam Humidifiers.



Armstrong Bulletin No. 505 explains the differences between Grandpa's day and now . . . shows reasons why humidification control is a competitive necessity . . . includes tables showing effects of indoor heating on relative humidity and relationship between RH and wood moisture content . . . includes wet bulb-dry bulb humidity and EMC table . . . recommended RH and EMC for various operations . . . advantages of steam for humidification and user reports of savings. Send for your free copy today, write:

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PLYWOOD RESEARCH

IT IS a long way from an engineer's strain gauge in Tacoma to a customer's signature on a plywood invoice. Nevertheless, basic research on fir plywood's action under all kinds of stress is one of the big contributing factors in many volume plywood sales.

Although industry promotion has been backed by research and testing for more than 15 years, the space and scope of the program has increased substantially in recent years, particularly in the past 12 months.

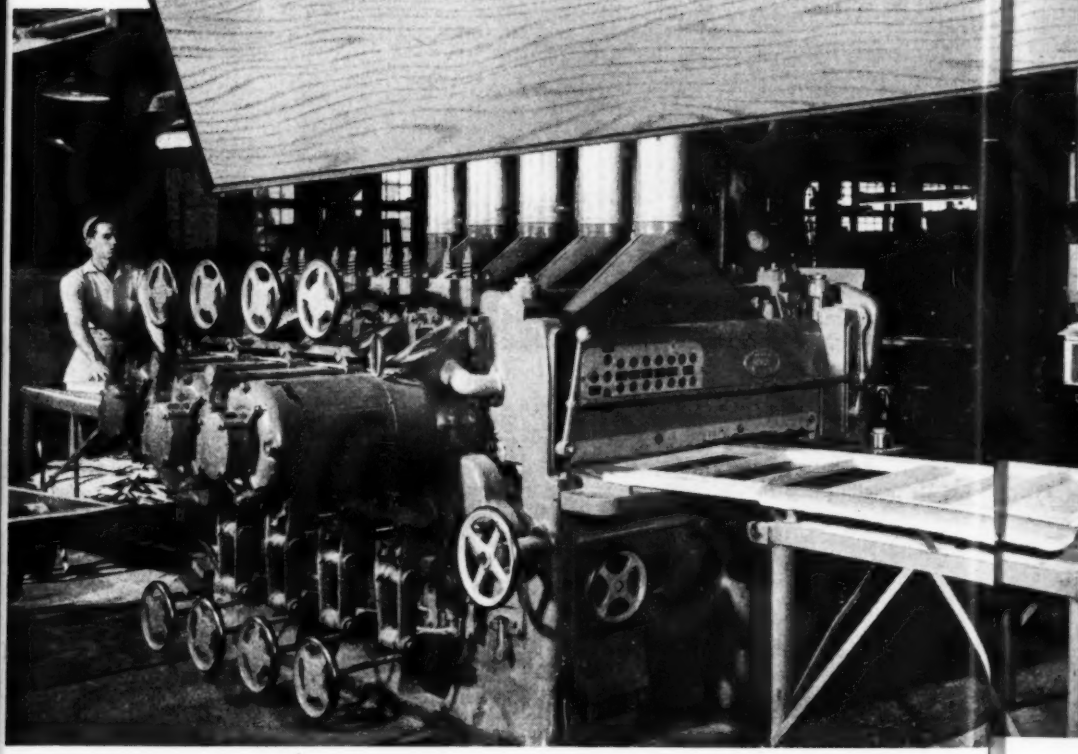
Among the most significant projects underway at the industry's Tacoma laboratory is a hush-hush study of face checking launched by the manufacturers two years ago. It is part of the over-all research and testing program directed by N. S. Perkins, Douglas Fir Plywood Association technical director.

The work on checking has been done by Thomas Baty. According to Perkins, Baty has already made an important contribution to knowledge of this phenomenon in rotary cut fir plywood and his work gives promise of a substantial improvement in the durability and quality of higher appearance grade panels in the future.

Baty will announce results of the project this summer before the Forest Products Research Society analyzing the progress already made in this direction. Among other things he has devised an improved practical method for accurate measurement of all degrees of checking.

Starting from scratch in a field in which little is known, Baty faced such complex questions as the varying degrees of checking in coarse and fine grained veneer, the effects of moisture content of the wood at various stages of manufacture on subsequent resistance to checking and the optimum time for application of water repellents.

Sanding more than 10,000 hours...



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GOLDEN JUBILEE
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Maintenance cost less than 20 of these!

That's the record of this Yates-American 8-Drum Sander in one West coast plant

Ask any user — the cost of maintaining a Yates-American 8-Drum Roll-Feed Sander amounts to "peanuts". Nicolai Door Manufacturing Company in Portland, Oregon, for example, spent less than $20 for more than 10,000 hours' operation!

That's practically nothing to pay, considering the extra performance you get from a Yates-American. Take the model S-800 — it does heavy sanding jobs ordinary machines can't handle.

See for yourself. Have the Yates-American man show you a Yates-American 8-Drum Roll-Feed Sander at work. And mail the coupon for descriptive bulletins.

Tear out this coupon and mail today!

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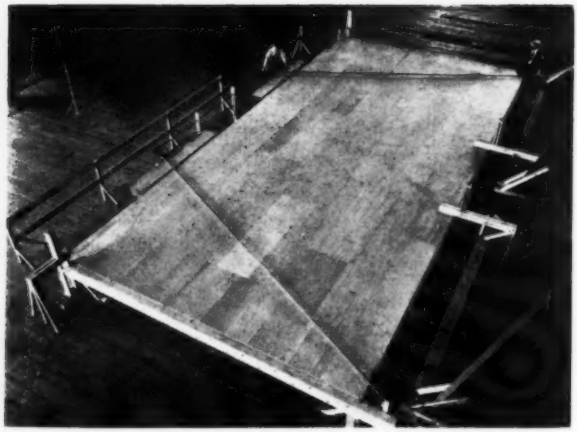
RESAWS • SANDERS



Full scale plywood diaphragms were tested in 1954 to determine structural effects of various types of construction. Data developed from this long-range project has prompted volume use of structural grades of fir plywood.

At the same time, the technical staff of the association has accelerated research and testing in the field of white pocket or "white speck" when it appears in fir plywood. A determined effort is underway to find some method of utilizing this lower grade material without jeopardizing the reputation for strength and quality based on DFPA grade trademarks.

This work is a long range study by the industry. It has already established that white speck seriously impairs the strength of the panel and the durability of interior protein glues. On the other hand, the research indicates that it may be possible to set up a special grade limited to interior uses where it would not be subject to moisture and where reduced strength would be acceptable. Results thus far indicate that many questions remain to be answered before this can be accomplished.

Also completed during the past year were 15 additional tests on full-scale plywood diaphragms. This is a form of construction in which a horizontal plywood surface lends strength to the end and side walls of a building. The tests have established that fir plywood provides a more rigid diaphragm whose action can be accurately predicted under stress. Structural values for plywood under these conditions have been accepted by the Uniform Building Code opening much broader markets for the panels in warehouse, supermarket, school and industrial construction.

The pioneering research in this field has been directed by David Countryman, association civil engineer.

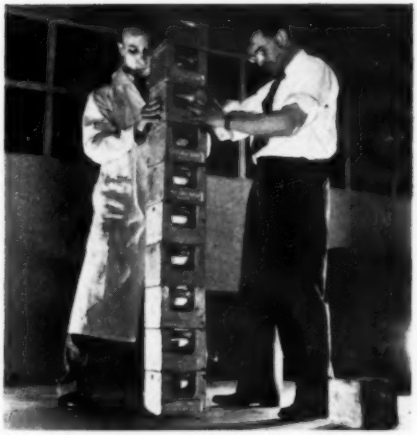
Concentrated load tests on panel edges are part of continuing product research providing basic technical data on which acceptance of fir plywood by building authorities and users is based.

Exterior fir plywood with waterproof bond is tested by boiling for hours, drying, and boiling again. In the two laboratories, 500,000 production-line samples are tested annually.

Countryman's tests on the "panel and girder" action of a plywood panel functioning as a continuous beam over its supports have also resulted in specific plywood sales.

For example, the test data developed by Countryman served as the basis for FHA acceptance of a new method of floor construction with heavy panels on widely spaced supports. One builder

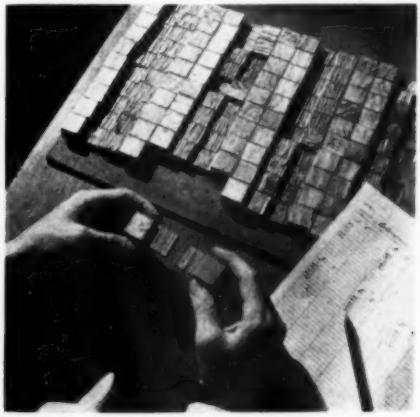
Boiled test specimens are then torn apart in a shear machine that puts all the strain on the glue-line.



Typical research project involves determination of effect of heavy loading on panel edges on underside of finished roof surfaces.

saves $500 a house with this system and DFPA publication of his story is prompting a number of other builders to follow suit.

The data is also serving as the basis for specification of ¾" structural fir plywood for roof decking over 4' support spacing. This is an economical method



Test specimens which have been torn apart are "read" by a trained wood technologist to determine the exact degree to which the break comes in the wood. This is the final indication of glue-line durability.

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I/WT* is natural wood edging with factory applied *thermo-setting* adhesive, ready for use by a pressure sensitive method of application to panel edges. Permanent bonding up to 2000 lbs. per sq. inch shear strength is achieved with an ordinary electric hand iron.

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Above sizes available in BIRCH, FIR, OAK, WALNUT, WHITE or RED Philippine MAHOGANY.
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---

of construction in many instances. Without the technical data developed by continuing research, it would be impossible to achieve acceptance of these newer and more economical construction systems some of which involve literally acres of plywood.

One of the most interesting current test projects involves fir plywood for highway signs. Under the direction of Thomas Moran, association chemist, the industry is testing the comparative resistance of fir plywood, overlaid plywood and competitive sign materials to vandalism of all kinds.

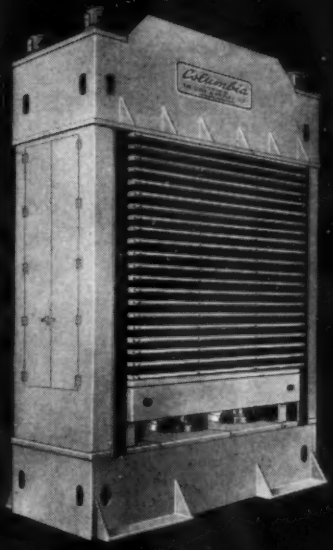
The data developed in this project will be used in a major promotion to traffic engineers and other specifiers in this field.

Other research completed during the year includes work on the strength of nailed plywood gusset plates, the design of plywood gusset plates, marine finishes for fir plywood and the durability of panels made with hard grain and soft grain veneer bonded with exterior adhesives.

Broad program of quality testing, the real punch behind industry-owned grademarks, is based on long-time field exposure studies as well as laboratory data. Photo here shows inspection of exterior plywood samples exposed in 1939. Performance data taken from exposure fence is correlated with laboratory test results to confirm glueline quality in fir plywood.

HERE'S A "SQUEEZE PLAY"...

that produces profits!



In the production of plywood, veneer, hardboard or other laminated products, there's no room for a "squeeze play" that might fail.

Leading manufacturers find Columbia Hot Plate Presses an all-star contender for applying the "squeeze play" that produces profits. Its rigid design, trouble-free hydraulic system and honest ratings assure dependable performance on any hot plate job.

There are almost a score of Columbia features that guarantee more production, of higher quality and fast, too! Complete details are available in new literature or from your Columbia Hydraulic Press distributor.

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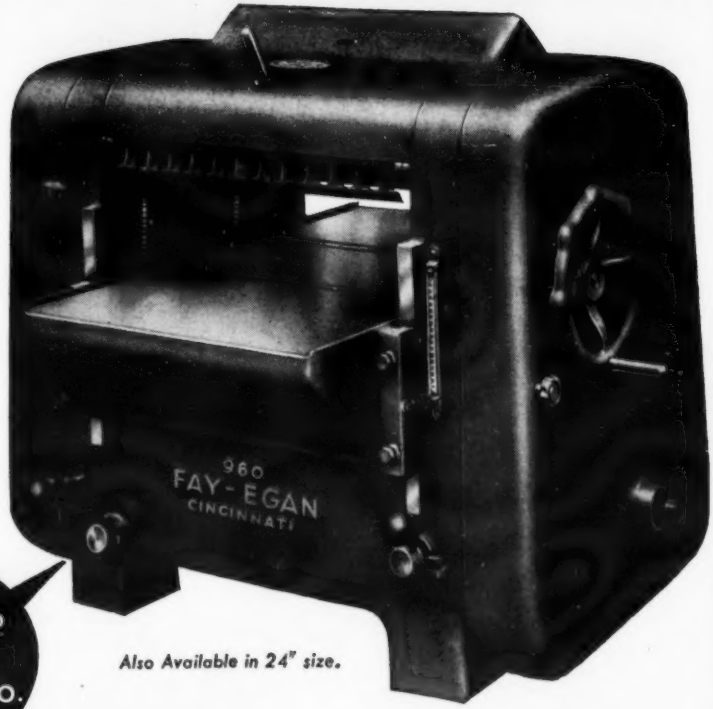
Production-proved, this Single Surfacer in 32" width is faster than old machines, saves on knife set-up and changeover time, too! A long list of features gives more production . . . better production . . . at lowest cost. Write for detailed literature today.



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- 4-knife round safety cylinder turns at 5000 rpm.
- Special quick-setting knife gauge.
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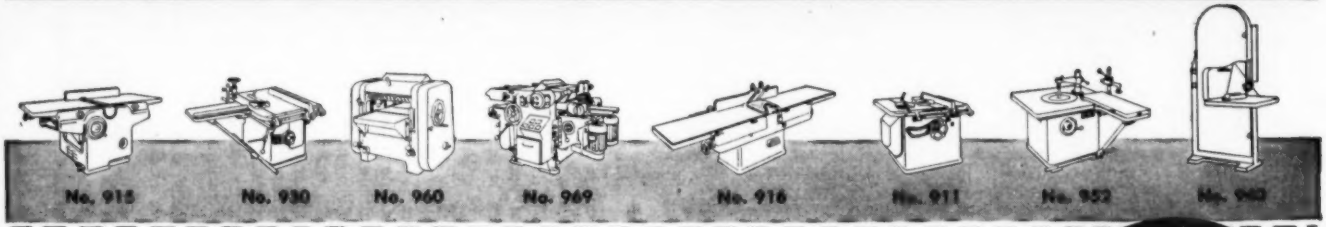
- Hinged aluminum hood permits quick, easy adjustment.
- Fan-cooled, totally-enclosed ball bearing motor, v-Belt drive.
- Sectional roll and chip breaker optional.
- New safety kick-back fingers for high production gang runs.

Ask about our tool lease and deferred payment plans.



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FPRS

Meets in Seattle

SCENIC Seattle will play host to some 700 registrants coming from all sections of the United States to attend the Ninth National Meeting of the Forest Products Research Society. The Olympic Hotel is headquarters for the meeting which will take place June 21-24. An excellent technical program on latest forest products developments will be combined with outstanding social events and tours to make this a long-to-be-remembered meeting.

Official Luncheon

Major items of interest at the luncheon will be the honoring of the incoming and outgoing presidents and a speech by the famed author Stewart Holbrook.

The WOOD WORKING DIGEST Award of Merit winners will be presented and Robert C. Van Kampen, president of the Hitchcock Publishing Co., will present the citations. This is the second annual Award of Merit Contest whereby associations, firms and educational institutions receive national recognition for their outstanding efforts in the promotion of wood and wood utilization.

Technical Sessions

The official technical sessions will begin on Tuesday morning, June 21. For the next three days, registrants will have the opportunity to hear and participate in article presentations, panel discussions and subject matter committee meetings.

Here are some of the subjects to be discussed: automation in the hardboard industry; an analysis of the lumber planing process; air pollution and the forest products industries; integration of northern hardwoods; paper overlaid veneer applications; use of plywood containers; carbides applied to woodworking machines and the place of basic courses in the forest products curriculum. There are more than 50 different technical papers to be presented in the over-all program.

Paul Bunyan Potlatch

Paul Bunyan was a man of the woods, as are all members of FPRS—one way or another. A potlatch is an old Pacific Northwest Indian ceremonial that brought the tribes together once a year to air grievances, give information, exchange gifts, enjoy dancing, and con-

Salmon fillets being prepared by Chef Chet Ullin, a potlatch authority.

sume tasty foods cooked over the open fire. Members of the FPRS and their families will have the opportunity of enjoying a genuine potlatch.

The Paul Bunyan Potlatch starts from Convention Headquarters at the Olympic Hotel. Busses start loading at 4 p.m. to take the conventioneers aboard a ferry boat for the 18-mile water trip to Bremerton, Wash. In Bremerton, the busses will pass through the U.S. Naval Shipyards to give the group a quick look at the building and repair of warships.

Following the Navy Yard tour, the busses will wind their way over Washington highways that penetrate cool and green forests to Twanoh State Park. The park, site for the Paul Bunyan Potlatch, is on the wooded shores of Hood Canal and not far from Olympic National Park.

Arrival at the park will be approximately 6:15 p.m. Chief Potlatcher Chet Ullin and his crew of Potlatchers will have spent the day over a hot open fire to prepare many hundreds of pounds of freshly caught Chinook Salmon.

After the tasty salmon feast, the entertainment of Pacific Northwest and Plains Indian dances will take place around the fire. Several interpretations of dances will be given in native attire. Indian tribes of the Pacific Northwest wore a different type of head-dress than

Indian dances in native surroundings will provide a taste of the colorful Northwest.

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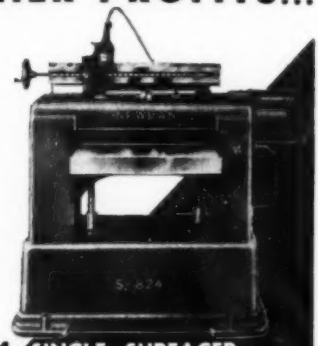
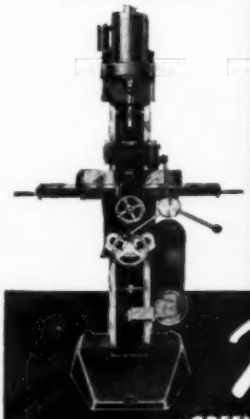


S–824 SINGLE SURFACER

K-16 VARIETY SAW

G-232 HYDRAULIC KNIFE GRINDER

T-20 MORTISER



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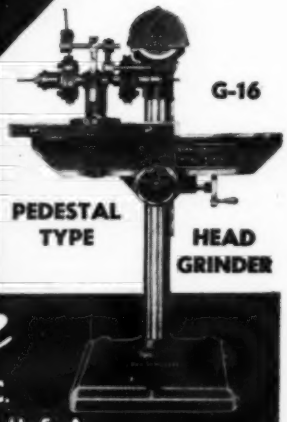

G-16 PEDESTAL TYPE HEAD GRINDER

Newman MACHINE CO., INC.

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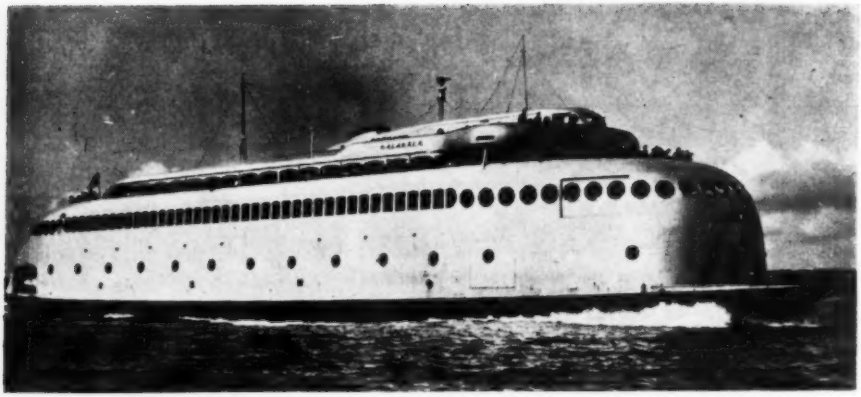

Streamlined ferry "Kalakala" will take the FPRS party from Seattle to Bremerton en route to the Potlatch.

the Plains Indians and the comparisons will prove interesting.

Before the party boards the busses for the homeward trek, the Pacific Northwest Section of FPRS will make presentations to some of those attending the Paul Bunyan Potlatch. Keys to the prize list will be a part of the registration.

Presidents to Be Honored

Director of Research for Chicago Mill and Lumber Co., Tallulah, La., president-elect Christian will take office at the Ninth National Meeting.

Mr. Christian has enthusiastically served the Society in many important capacities since he joined in 1949. As South-Central Regional Board Member from 1949-52, he represented the Mid-South area of the U.S. and traveled extensively in behalf of FPRS affairs. Mr. Christian was general chairman of the society's 7th national meeting held at Memphis, Tenn., in 1953; was elected vice-president in 1953, and in 1954 became president-elect. He is program chairman of this national meeting in Seattle.

Completing a highly successful year of leadership during which he visited virtually every one of the 13 FPRS chapters, Mr. Carr crisscrossed the continent many times to become known as the society's "flyingest" president. He will turn over the president's gavel to Moss B. Christian at the official luncheon, Tuesday noon, June 21.

Mr. Carr, who will remain on the executive board as past-president, has been very active in FPRS affairs since he joined in 1948. One of the founding members of the Northern California Section, he served as Southwest Regional board member for three years. Mr. Carr was elected vice-president at the 1952 national meeting in Milwaukee, Wis.; president-elect in 1953; and in 1954 he was program chairman at the Grand Rapids national meeting.

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FMC HAS THE ANSWER

Many of the problems of industrial nailing which are troublesome to you today, may have already been successfully studied and solved by FMC nailing machine design and application engineers.

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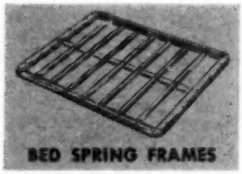
Hand us your nailing problem. We believe we can give you a successful FMC answer to it from the scores of types, sizes and models of FMC nailing machines which have been built and are in successful operation by firms like yourself—who once also had a nailing problem!



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Timetable of Events

Keep this timetable handy. You may wish to fill in appointments, etc., of your own in the blank areas.
(All Technical Sessions and Committee Meetings Will Be Held in the Olympic Hotel, Convention Headquarters)

	MONDAY June 20	TUESDAY June 21	WEDNESDAY June 22	THURSDAY June 23	FRIDAY June 24
7:15 a.m.				Authors' Breakfast (morning technical sessions) Parlor B Authors' Breakfast (afternoon technical sessions) Parlor C	
7:30 a.m.		Authors' Breakfast (morning technical sessions) Parlor B Authors' Breakfast (afternoon technical sessions) Parlor C	Authors' Breakfast (morning technical sessions) Parlor B Authors' Breakfast (afternoon technical sessions) Parlor C		All-day Field Trip to Everett, Wash.
8:00 a.m.		Registration Mezzanine	Registration Mezzanine	Registration Mezzanine	
8:30 a.m.				Technical Session IX Veneer and Plywood Junior Ballroom Technical Session X Wood Machining Parlors E & F	
8:45 a.m.				Subject Matter Committee Meetings Wood Drying—Parlor A Chemical Utilization Parlor B Packaging—Parlor C	
9:00 a.m.		Technical Session I Composition Board Junior Ballroom Technical Session II Wood Drying Parlors E and F	Technical Session V Packaging Junior Ballroom Technical Session VI Chemical Utilization Parlors E & F		
9:30 a.m.		Subject Matter Committee Meetings: Wood Finishing—Parlor A Glues & Gluing—Parlor B Logging & Milling—Parlor C	Subject Matter Committee Meetings: Marketing—Parlor A Composition Board—Parlor B Veneer & Plywood—Parlor C		
10:00 a.m.	FPRS Executive Board Meeting Parlor 1				
11:15 a.m.				FPRS Business	

		Glues & Gluing — Parlor B Logging & Milling — Parlor C	Composition Board — Parlor B Veneer & Plywood — Parlor C	
10:00 a.m.	FPRS Executive Board Meeting Parlor 1			
11:15 a.m.				FPRS Business Meeting Junior Ballroom
12:00 Noon		FPRS Official Luncheon Spanish Ballroom		Sec. Officers' Advisory Committee and Executive Board Luncheon Parlor A
1:00-8:00 p.m.	Registration Mezzanine			
1:30 p.m.			Technical Session VII Glues & Gluing Junior Ballroom Technical Session VIII Education Parlors E & F Subject Matter Committee Meetings Parlor B Wood Preservation — Parlor A Quality Control —	Technical Session XI Marketing Junior Ballroom Subject Matter Committee Chairmen Meeting Parlor 1
2:00 p.m.		Technical Session III Logging & Milling Junior Ballroom Technical Session IV Smog Control, Electric Drives, & Wood Preservation Parlors E & F Subject Matter Committee Meetings Education — Parlor A Wood Machining — Parlor B	Informal Plant Tours	
4:00 p.m.				Paul Bunyan Potlatch
5:30 p.m. to Midnight			FPRS Party — Reception Dinner, Entertainment, Dancing Spanish Ballroom	
7:30 p.m.	Membership Committee Meeting Parlor D			
8:00 p.m.	Employment Committee Meeting Parlor 1			

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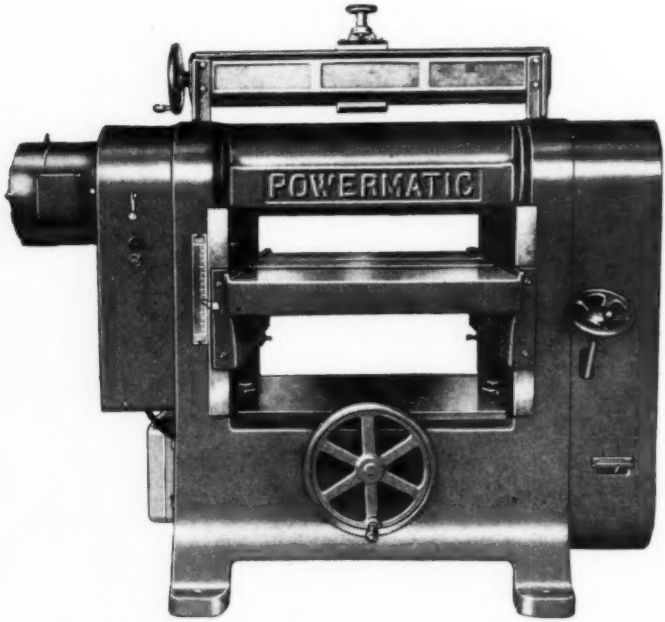
224–24″ HEAVY DUTY SINGLE SURFACER

A heavy duty finishing planer, ideal for the cabinet shop or production plant. Rate of feed from 20 to 100 feet per minute. All journals either roll or ball bearing.

Write for complete information.



CHECK THESE OUTSTANDING FEATURES

Equipped with sectional chipbreaker and feed rollers. All feed rollers power driven with 1½ HP motor. Four (4) knife, safety type cutterhead, with speed of 3450 rpm. All moving parts completely guarded for safe operation. Equipped with 7½, 10 or 15 horsepower motors. IDEAL FOR ANY TYPE WORK, FROM CABINET MAKING TO PRODUCTION.

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Also Manufacturers of 12″, 16″, 20″ Planers, Mortisers, Tenoners & Jointers

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Award of Merit Winners Are Chosen

IT was a difficult job for the judges of the Second Annual Award of Merit Contest sponsored by WOOD WORKING DIGEST to name five first place winners and six organizations to receive honorable mention citations. The winners will be announced and awards presented at the official luncheon of the Forest Products Research Society on June 21 at Seattle, Washington. Mr. Robert C. Van Kampen, president of the Hitchcock Publishing Company, Wheaton, Ill., will make the presentations.

Judges for the contest were George Lamb, executive secretary of the Mahogany Association; Herbert Baker, Herbert Baker Advertising Agency; Russell Gerleman, advertising manager, National Casein Co.; and Charles White, secretary-manager, American Walnut Manufacturers Association.

There were a number of excellent entries submitted. Some fine work is being done to support wood and advance the utilization of it over other materials. The award is made to organizations who are promoting public understanding of the advantages, values and uses of wood over other materials.

There will be another contest in 1956. The material to be submitted will represent the work done in 1955 to help the woodworking industry. Classifications for entries will include: lumber, dimension stock, veneer and plywood; products made from wood waste; finished wood products; wood components for structural or other parts; machinery

Here are the men who name the winners—Charles White, George Lamb, Herbert Baker and Russell Gerleman.

Charles White ponders some of the highlights in a presentation.

and materials that make an expanded use of wood possible; and a separate division for universities and colleges.

Here are a few of the steps which the winners followed in preparing their entries. (1) A page or summary explaining the new product, objective or problem. (2) Tearsheets or proofs of advertising done in connection with it. (3) Samples of published material—brochures, news stories, catalogs, etc. (4) Pictures of the product. (5) A summary of the success of the project and how it advances wood utilization.

"Herb" Baker and "Russ" Gerleman read through each entry.

George Lamb concentrates on detail given in this entry.

• • • •

Plan now to enter the Award of Merit Contest for your organization! Details will appear in later issues of WOOD WORKING DIGEST.

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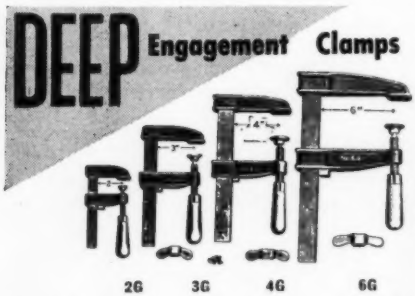

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new high-speed router cuts any material smoother, faster!

Porter-Cable's new Model 511 Router has greater *power*, greater *speed*—for up to *36% faster cutting* in wood, plastics, laminates. And its revolutionary Kam-Grip Chuck means bits can't run out—chatter and kick are ended—tools last longer, cuts are smoother. It's a Porter-Cable *quality* tool throughout—priced to make it the *biggest router value ever!* See and try it now—*or write today for the name of your nearest dealer and FREE 48-page Router Manual.*

MODEL 511 ROUTER
1¼ h.p., 22,000 rpm, Kam-Grip Chuck, Micrometer Depth Adjustment, oversize sealed bearings, only $125.

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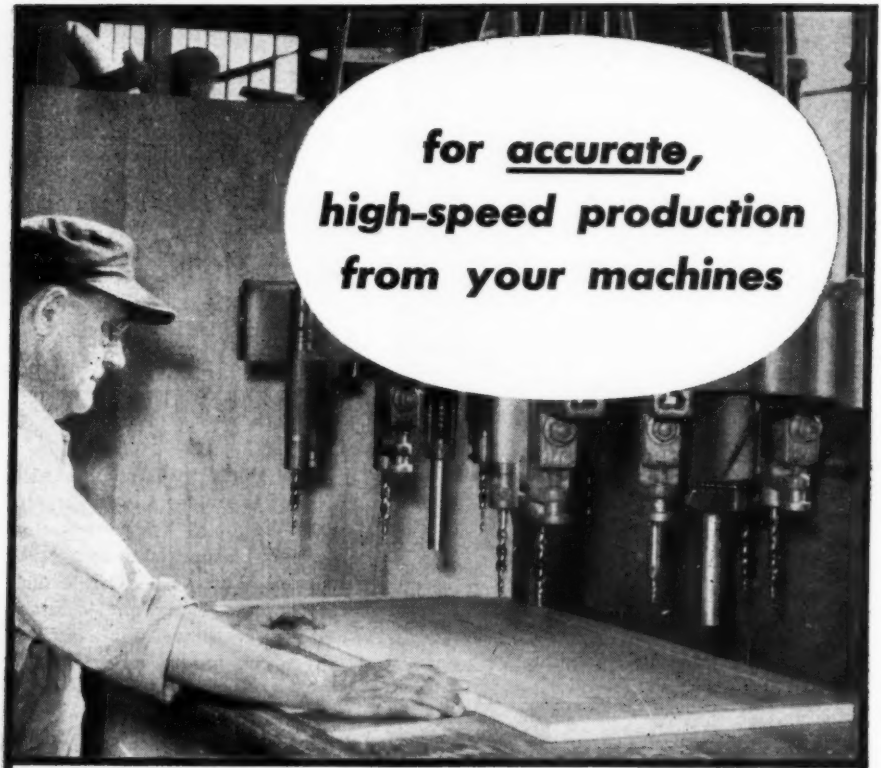

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RIGHT or WRONG?

A roundup of day to day in-plant problems and how they were handled by management men. Each incident is taken from a true-life grievance which went to arbitration. Readers who want the source of any of these cases may write to WOOD WORKING DIGEST.

Is an employee guilty of "insubordination" if she tells a foreman to "drop dead"?

What Happened:

Mrs. Betty Hermann was at her workbench when the phone rang on her foreman's desk. She left her work and answered it. After she said "hello" the voice on the other end asked: "Who is this talking?" "This is Betty Hermann," she replied.

The "voice," in somewhat gruff tones barked: "What are you doing answering the phone? You're not hired for that." Somewhat nettled, Betty answered, "Oh, drop dead!" and hung up. It so happened that the "voice" was the general foreman. He stamped into Betty's department and wrote out a "warning notice" charging insubordination. This reprimand went into the worker's personnel file, and may have stood in the way of a promotion. Betty protested, and the case went to arbitration.

She claimed that:

1. She did not know she was talking to a member of management.

2. She couldn't be blamed for what she said because the "voice" was rude.

The company didn't go along. It held that:

1. She had no right answering the phone as she had never done it before.

2. She knew it was "management" on the other end of the phone because she had known and talked to the "voice" many times.

3. That kind of language is inexcusable on the part of an employee, particularly when the "voice" did nothing more than ask her why she was not working instead of answering the phone.

Was the company: Right ☐ Wrong ☐

What Arbitrator Samuel H. Jaffee Ruled:

"I am satisfied that there was no sufficient provocation for Mrs. Hermann to say what she said. It seems clear enough that employees should not manifest disrespect for supervision by telling supervision to 'drop dead' even though the foreman's tone may not have been dulcet. She had a pretty good idea that the person at the other end of the line was a supervisor, for it is unlikely that a rank and file employee would have said to her what the supervisor did say. Moreover she took a chance on the identity at the very least, and she could hardly complain validly now if the gamble turned out to be wrong. I cannot find that the reprimand is an unreasonable measure of discipline."

When can you make an exception and not fire a man for drinking on the job?

What Happened:

The day after he was fired, John X

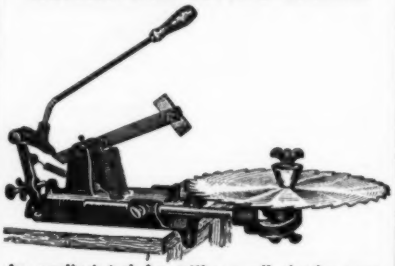
sent the following note to the personnel director: "I protest my discharge and ask reinstatement with full seniority and pay for lost time." John X was a maintenance man. At 2: P.M. one afternoon, he was found drunk on the job by his foreman. He was taken to the personnel office and fired. The company had a strict rule against bringing liquor into the plant or drinking. When the case came to arbitration, John X did not deny his condition, which had caused his discharge. But he made a plea for reinstatement on 2 grounds:

1. He had 4 years seniority and never had a blemish against his record.

2. Discipline penalties handed out by management should be corrective—not punitive. Therefore a more proper penalty would have been a layoff of a week or so to teach him a lesson.

The company came back strongly. While accepting in general the theory of "corrective discipline," management contended that the offense committed by John X was so serious as to warrant discharge. It pointed out that the plant employs 31% women and a large number of relatively young people, so that its responsibility for the maintenance of proper standards of conduct is especially great. The company further argued that it has consistently applied the penalty of discharge for bringing liquor into the plant or drinking on the

SIMPLEX
CIRCULAR SAW SETTING MACHINE



An excellent tool for setting small circular saws. The successful operation of all circular saws depends largely upon the manner in which they are fitted.

To obtain the best results the teeth should be properly and evenly set.

This machine does the work perfectly, insuring easy and true running and smooth cutting.

The hammer strikes every blow with equal force and at the same angle hence the set of each tooth is absolutely uniform. Will give a light, medium or heavy set.

Adjustable for saws, either rip or cut-off, from 5" to 24" in diameter.

The machine will last for years if handled with ordinary care and intelligence.

Further details upon request

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ALDEN

All PURPOSE SELF FEED MULTI-RIP SAWS

Features

1) This model has 4 rates of feed — 48 to 200 f.p.m.
2) 12" saw space.
3) 14" dia. saws.
4) 3" thick capacity.

Here is an all-purpose rip saw for gang, single and straight ripping. Unique feature assures powerful and positive feed both above and below stock. Each feed roll is power driven and individually adjustable. Motors and saw blades are available.

WRITE FOR LITERATURE

L. G. ALDEN MACHINE CO.
312 Henderson St. • Joliet, Illinois
Established 1883

job, and that its intention to use this penalty has been published to employees regularly for a number of years.

Was the company: Right ☐ Wrong ☐

What Arbitrator Russell A. Smith Ruled:

"X did commit a very serious offense. Of that the arbitrator has no doubt, and he agrees with the company that it is more serious to drink and become intoxicated on the job than to appear for work in an inebriated state. The employee who appears for work 'under the influence' can be turned away at the gate, before he actually attempts to start work. Even in this situation the employee has clearly breached his duty to the company, and some penalty is proper, but the company is able, if vigilant enough, to safeguard other employees and its property.

The man who deliberately drinks on the job, and especially one who does so openly as X did here, not only steals time which properly belongs to his employer, and contributes to a breakdown in plant morale by his open flouting of the rules: in addition, his condition may reach the point, before he is noticed by supervision, where he seriously endangers other employees or the employer's property.

By way of extenuation, the union points to the fact that X had over 4 years' seniority when he was discharged, and an unblemished record. The company concedes that this is the first offense on his record insofar as disciplinary action is concerned, and there is no suggestion that he has not been a good employee.

The arbitrator, after earnest consideration of all the evidence has reached the conclusion that discharge was too severe a penalty. In so deciding he has been influenced primarily by the facts that this was the first blemish on the record of an employee having over 4 years' seniority, and that it was not

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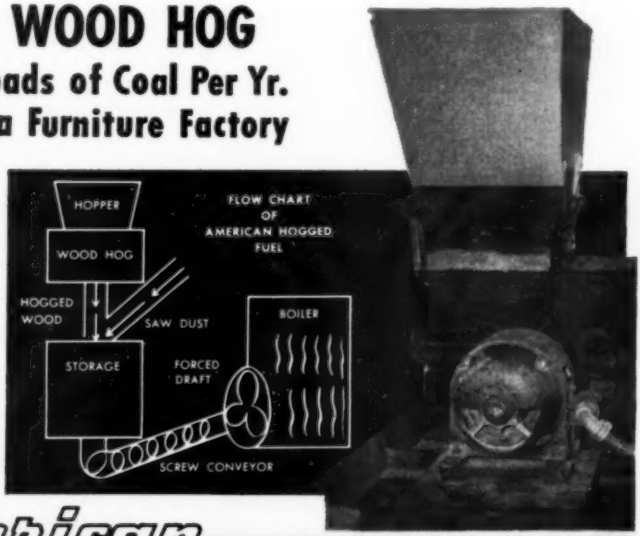
WRITE for AMERICAN WOOD HOG Bulletin



American PULVERIZER COMPANY

1510 MACKLIND AVE. • ST. LOUIS 10, MO.

established that the grievant brought the liquor into the plant or participated in any drinking spree or brawl in the plant.

Under these circumstances, the arbitrator believes that the company acted in disregard of its professed policy of corrective discipline, and that the grievant should be given another opportunity to show that he can be a good citizen in the plant. The arbitrator will add that if there had been a showing of any past violation of the liquor rule by the grievant, or a record otherwise indicating serious question as to the likelihood that the grievant could become a good employee, he would without question have sustained the discharge. I direct a two month layoff without loss of seniority, but without back pay."

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FAST DELIVERY FROM STOCK
NEWMAN MACHINE CO., Inc.
GREENSBORO, NORTH CAROLINA, U. S. A.

If you lay off an employee, must you give him vacation pay?

What Happened:

The company had a policy which read "All employees who have been in the continuous service of the company for one year prior to June 30th shall receive vacation pay, a sum equal to 2% of his total straight time earnings of the previous 50 week period." A group of employees with more than one year's service were laid off because the employer discontinued the department.

The employer refused them prorated vacation pay because they were not "in continuous service" until June 30th. The

workers, when they took the issue to arbitration, said that was true, but that the layoff was no fault of theirs, and had the department been continued they would have had eligibility. Therefore, they were entitled to at least part vacation pay.

Were the employees: Right ☐
Wrong ☐

What Arbitrator L. E. Gooding Ruled:

"We consider vacation pay an earned right in the form of deferred compensation and as such, cannot be taken from the employee once he has qualified, by any uni-lateral action on behalf of the employer such as in this instance discontinuing certain operations, and thus causing the employee's layoff. The agreement provides that vacation pay shall be a sum equal to 2% of the employee's straight time earnings of the previous 50 week period immediately preceding the vacation period. However, the employee was employed for a period of approximately seven months since the last vacation period. It is our conclusion that the employee is entitled to vacation pay amounting to a sum equal to 2% of his total straight time earnings from the period of July 1 to the date of his layoff, January 31."

CARBIDE BLANKS

The Vascoloy-Ramet Corporation of Waukegan, Illinois, has just published a new carbide catalog which shows a complete line of blanks, tools and inserts with prices as well as technical information on the proper grade selection. Included in the catalog are several new items including, new standard blank sizes and new rectangular strip sizes.

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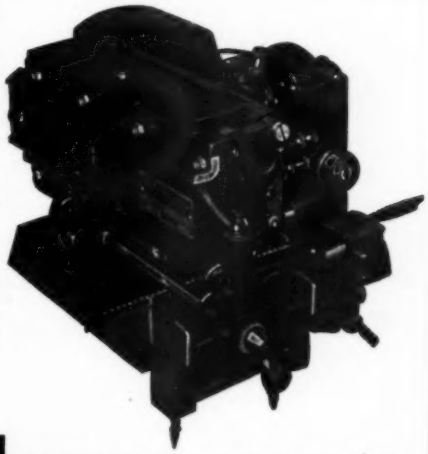

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Evolution of LUMBER DRYING TECHNIQUES and DRY KILNS

Part 19

By Paul H. Graham

THE location of the vents did not seem to materially affect wet-bulb temperatures, except possibly where the vents were located at just one end of the kiln. The amount of air to be vented generally depended upon the species being dried, with considerable venting of hot, moist air being required for fast drying species and much less for slow drying species. In the early natural circulation kilns in which ventilation was used to promote circulation, venting was usually excessive and unnecessary ventilation introduced too much cold air into the kiln.

With fresh-air intakes and moist-air vents open sufficiently long as to require almost constant humidification, the development of controllers to operate dampers was inevitable. The controlling mechanism for the vents was attached to the wet bulb control and worked in the opposite direction from it. When excess moisture evaporated from the wood caused the wet-bulb setting to be exceeded, the vents were opened to allow some of the hot, damp air to escape and humidity was lowered with the intake of cool fresh air. When humidity fell to the control set point, the vents were automatically closed.

Still using the dehumidification principle, moisture was removed from the kiln air by condensation. Humidity was maintained at the desired level mainly by the amount of cold water that flowed through the condenser pipes. In some installations a refrigerator plant was even installed and brine was circulated through the condenser pipes. In the usual application all air was not necessarily lowered to the dew point by the condenser pipes but only enough required to remove the moisture evaporated from the lumber. When less humidity was desired, the flow of cold water was increased. When a higher level of humidity was required, the flow of cold water was decreased. The water usually ran out as waste after passing through the pipes.

Need For Humidity Control

As stated in some detail in a previous article, the water spray kiln pointed up the need for and value of relative humidity control. In this kiln the temperature of the water used in the spray was the major means of controlling relative humidity. Spray temperature was usually required to be below the dew point of the air passing through the spray. If the sprays were sufficiently powerful, enough kiln air was cooled to approximate water temperature to aid in controlling humidity. The air came out saturated and with a temperature below the original dew point. When heated to its original temperature, the air was then drier than it was before passing through the water spray.

Conditioned air is blown into and moist air exhausted out of kiln through perforated plates; steam jets in return air duct supply humidity or humidity is decreased by opening fresh air intake on return duct.

The water sprays operated to cool the air to the dew point each time it passed through the circuit. The water spray kiln had jets located in the spray chamber and mechanical action was used to induce circulation. The water was returned from the spray chamber and recirculated by pump, with sufficient cold water being added to bring the temperature down to the required range. The water spray also controlled humidity by adding moisture at a controlled water temperature. Some of these kilns also used condenser coils on each side of the kiln to aid in the removal of excess moisture from the kiln air.

Water sprays are still used where steam is not available and water is also used in open troughs or tanks for kiln humidification. This type of humidification is not recommended, however, as it is difficult to control.

A modern gas-fired kiln, for example, carries as humidifying equipment a battery of misting nozzles placed between hot air outlets and circulating fans to produce vaporization without the water impinging on the lumber or kiln walls. Each misting nozzle passes about 2½ gallons of water per hour at 50-lb. water pressure.

Water sprays were generally found to be not as convenient as steam sprays for controlling relative humidity. Steam for humidification was supplied either by steam jets or perforated pipe steam spray lines, with the latter being generally most popular.

The steam spray pipes ranged from 1″ to 2″ in diameter, were drilled with ¼″ to ⅜″ holes at intervals of 2′ or 3′, and were usually controlled by a valve adjacent to the control valves for the steam coils. The steam spray lines were generally located above or below the steam coils used for heating with down-pointing sprays so that steam would not spray on them. Wet-bulb temperature was regulated by the amount of live steam passed through the valve to the steam sprays and on into the kiln air and when required, by adjustment of the vents.

Steam spray lines were and still are used in internal-fan forced-circulation dry kilns. In both natural circulation and internal fan kilns the steam spray lines usually extended the length of the kiln. In the fan kilns the spray lines were generally located near the fan to permit the spray to be thoroughly mixed with the kiln air before passing through the lumber charge.

Both steam jets and spray lines were used in external fan and external blower kilns installed near the heating units, usually in ducts leading to the fans or in the return air ducts. Fans, blowers and heaters were outside of the kiln, and moisture laden air was exhausted by stacks in the roof and fresh air was drawn in through intakes by fans or blowers. Humidity was usually decreased by opening the fresh-air intake on the return duct.

One of the earlier kilns of this type reduced humidity with canvas curtains

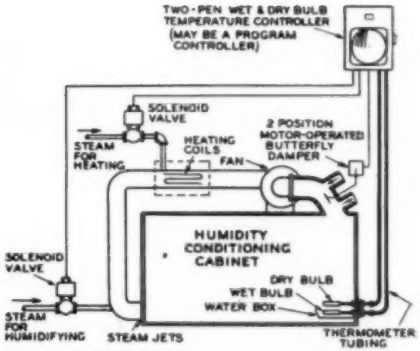
which were used to form outer walls of the flues, providing a ventilated space between curtains and side walls about 1 foot in width. Moisture transfused through the curtains from the inside out and was carried away on the ventilating current of air exhausted through a chimney.

How To Control Humidity

Humidity in progressive dry kilns was sometimes regulated by adjustment of the proportion of return air taken by the fan. Humidity control was usually obtained by a humidistat control heating equipment which operated to add just enough heat to the incoming air to maintain the desired relative humidity. The humidistat was located in front of the fan outlet and actuated a steam valve in accordance with relative humidity changes which in turn regulated the steam flow to the heating coil. This provided automatic humidity control. When relative humidity drop exceeded the set control point, the steam was shut down. When relative humidity overrode the control set point, the steam flow was increased.

In a progressive kiln using a hot air furnace as the heating source the humidistat humidity control operated to regulate an air motor to position the mixing dampers. One leg of the mixing damper served to take hot air from the furnace, the other took cold air which bypassed the furnace. The air motor mixed the hot and cold air to properly maintain the relative humidity set point on the humidistat.

While this arrangement operated efficiently in most instances, there were times when it could not perform its designed functions properly. It was not possible for steam coils to increase humidity of the air when the atmospheric relative humidity dropped below the set point on the humidistat. To compensate for this shortcoming, it was necessary to discharge a small amount



Courtesy Bristol Co.

Schematic sketch of electronic controller used to condition kiln air in which humidity and temperature are both controlled.

of steam or atomized water in the air stream ahead of the heater and fan when this condition prevailed.

In the conventional progressive type kiln air entering the dry end of the kiln is heated by steam coils and humidified by means of a steam jet, before it passes upward through the lumber, horizontally through the length of the kiln, and finally passes out into the outside atmosphere through flues or chimneys. As the air moves through the kiln, it becomes cooler and more moist. The cooling increases the relative humidity and more moisture is added as it evaporates from the lumber.

In effect the severity of air action is automatically reduced as the air approaches the green lumber, the extent of reduction depending on kiln design, outside atmospheric conditions, and thickness, species and moisture content of the lumber being dried. The longer the kiln, the more moist the air and the cooler it is at the green end.

Reduction of circulation seems to produce a similar effect. Because temperature and humidity is controlled at one end or opposite ends, control of conditions for required moisture and humidity throughout the length of the kiln is somewhat difficult. Steam jets

are sometimes installed along the length of the kiln, to increase humidity of the kiln air as it moves toward the green end, and vents are provided along the kiln length to exhaust some of the moist air before it reaches the green end.

Blowers are used to force air from the hot to the cool end, with evaporation being relied upon to cool and humidify the air. Steam sprays are sometimes used to maintain proper relative humidity. Steam jet blowers are also sometimes used to build up humidity. Ventilation provides the means of carrying off excess moisture, with size, number and location of vents varying considerably with different makes of kilns. Some kilns are vented for the full length of the kiln, some are vented only at the green end, and others at the dry end.

Steam Spray Uses

It is generally conceded that steam spray, whether applied by jet or pipe line, is currently the most efficient medium for humidification of the kiln air. In most modern kilns wet-bulb temperature is regulated by a controller which not only controls the steam spray but exhaust dampers as well. When the wet-bulb temperature rises above the control set point, air pressure from the controller is decreased to open the exhaust dampers to remove hot, damp air. When the wet-bulb temperature drops below the control point, air pressure is increased to close the exhausting damper and, as required, to actuate steam flow to the steam spray line to increase the humidity level of the kiln.

As noted in a previous article there are currently available various types of controls designed for use with humidity controllers for automatically regulating dampers, vents, valves and other apparatus used in kiln drying. Automatic controllers operate to sim-

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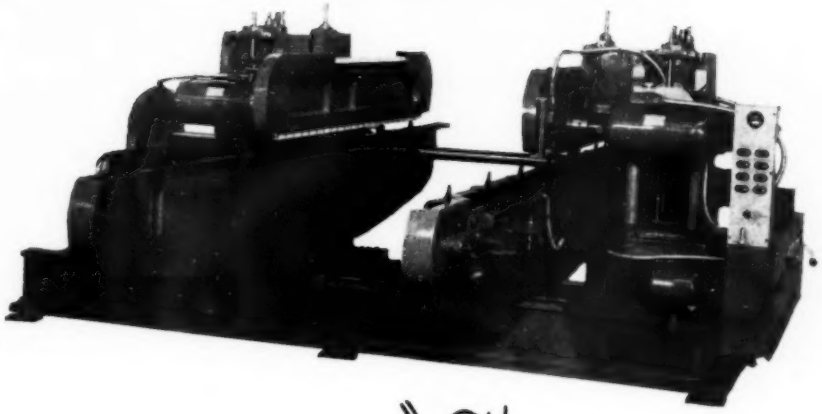

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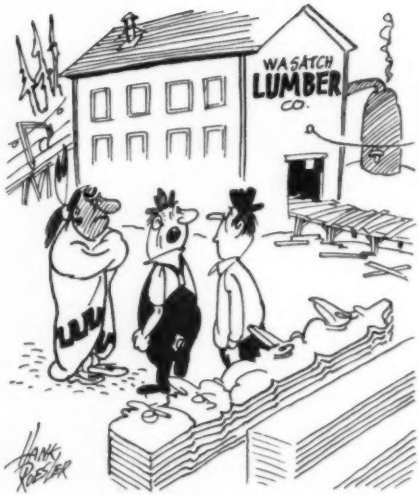
plify problems of humidity by maintaining with reasonable accuracy the pre-determined schedule of operations, and have demonstrated many operating economies.

Many humidity control systems use a separate control head for the steam spray line and another for the vent dampers to prevent one from fighting the other. In these systems, although humidity is maintained chiefly through automatic damper manipulation, the control operates to first close the dampers before it permits the steam spray to come on.

Arrangement of Vents

Ideal vent control of humidity conditions in the kiln is said to prevail when the vents are opened only when the steam spray is shut off immediately after humidity rises above the control set point. The vents are then opened to exhaust hot, moist air and draw in



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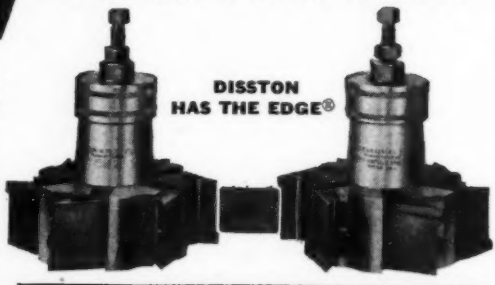
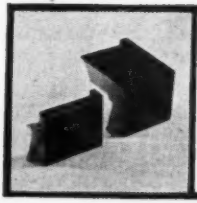
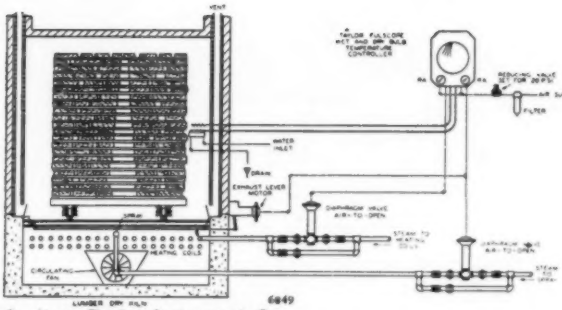




Long-Life Disston Knives Cut Costs

Notice the new and worn-out knives at left and how the latter retains its pattern and wears right down to the end.



Courtesy Taylor Instrument Co.

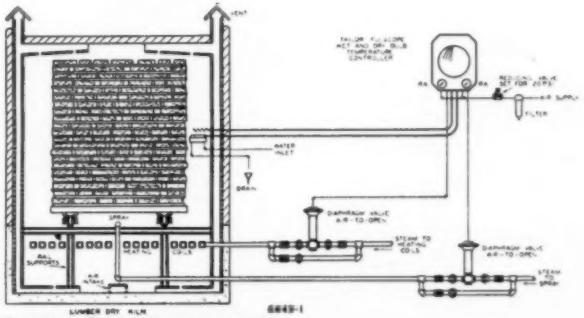
Layout sketch of humidity control system for internal fan forced circulation dry kiln.

fresh cool air which, when heated, will lower the humidity of the circulating kiln air. A primary objective is arrangement of the venting system so that nearly all saturated air is vented and little live steam is required except for conditioning lumber after drying. The venting system is designed so that wherever possible vents are so arranged that fresh air coming into the kiln is all at the same temperature, to eliminate temperature differentials along the kiln chamber.

Automatic vent damper control has been said to have saved up 50% of steam required for humidification or relative humidity control. Best results are said to be obtained where wet-bulb and dry-bulb settings produce a minimum of venting and a minimum of steam spraying, as when the kiln is vented only as required to prevent relative humidity from becoming too great.

A dry kiln engineer advises that if vent dampers remain closed all of the time and wet-bulb temperatures coast above the desired temperature, venting the kiln enough to require steam spray to maintain the desired wet-bulb temperature is wasteful.

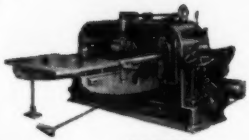
Controls of wet-bulb and dry-bulb temperatures are never entirely independent of each other. If dry-bulb temperature is at the proper point but wet-bulb temperature is low, for example, turning on the steam spray to increase the wet-bulb temperature will also increase the dry-bulb somewhat. On the other hand, decreasing or shutting off the steam spray or opening the vent dampers to lower wet-bulb temperature will also cause a slight drop in dry-bulb temperature unless heat is turned on enough to compensate for the drop.



Courtesy Taylor Instrument Co.

Layout sketch of humidity control system for natural circulation dry kiln.

ECCO



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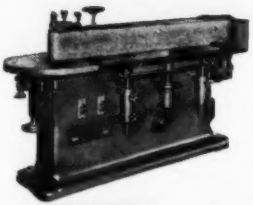
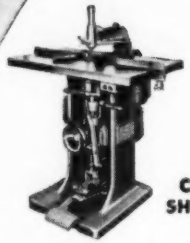


OSCILLATING EDGE BELT SANDERS

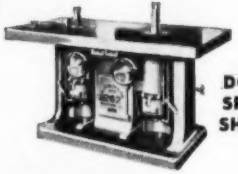
NON-OSCILLATING EDGE BELT SANDERS

OSCILLATING SPINDLE SANDERS

PNEUMATIC DRUM SANDERS



COMBINATION SHAPER-ROUTERS



DOUBLE SPINDLE SHAPERS

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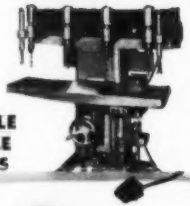

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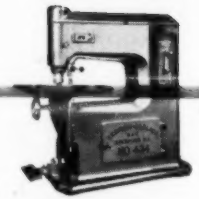

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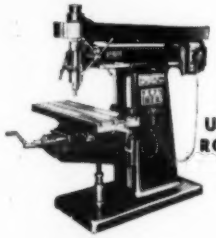

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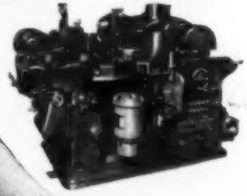
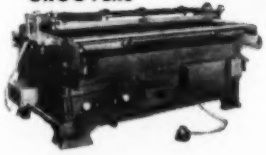
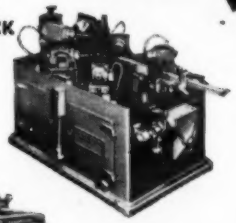


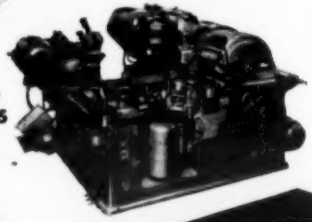
HI-SPEED MOULDERS



MULTIPLE SPINDLE GROOVERS

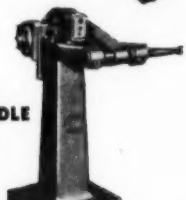


AUTOMATIC CORNER BLOCK MACHINES



HI-SPEED MOULDERS

INFEED ATTACHMENTS FOR SHAPERS AND SAWS



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A service engineer for a modern dry kiln manufacturer advises that for proper control of humidity with steam sprays, the vent dampers should remain closed most of the time. Vents are kept closed except when moisture comes from the lumber by evaporation fast enough to raise the wet-bulb temperature at least 2 degrees above the set point. He recommends that steam pressure be adjusted so that the kiln will call for steam about 80% of the time.

He points out also that since the amount of moisture the kiln air can hold varies with its temperature, relative humidity may be decreased by increasing the temperature of a volume of air containing a fixed volume of water, or can be increased by decreasing the temperature. He warns that air that is too hot or dry will damage the wood structure and is bound to cause degrade.

Other Controls

Investigation of humidity control of various types of dry kilns turned up an interesting system of humidification in an electric kiln. Humidity control was provided by two evaporating tanks on the entering air side of the lumber, in which water was vaporized by electric immersion heaters that were controlled automatically by a wet-bulb thermometer. Intake and outlet vents were provided to change the kiln air.

In the much-publicized high-temperature dry kilns few had any means of continuously and automatically controlling humidity. The rate at which humidity level fell as drying progressed was controlled to a limited extent by varying the amount of entering fresh air by adjustment of the intake damper. Humidification was used only during the preliminary warm-up period and for conditioning periods after the drying cycle. Low pressure steam was used (less than 10 lbs.) and was delivered to the kiln in a conventional steam spray line.

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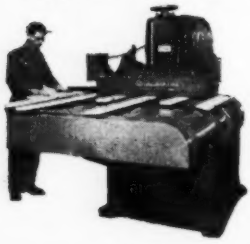

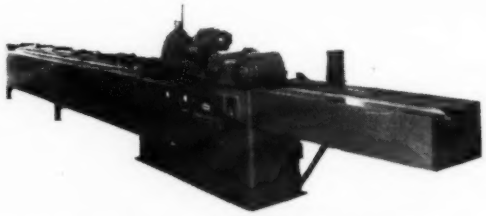

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Here's how VMT MILLED-TO-PATTERN KNIVES keep pace with Modern Operations at Bassett Furniture Industries

VMT Milled-to-Pattern Knives used by Bassett can rabbet dresser polystyles, corner posts, etc. at rate of 125 feet per minute—making precision cuts for the life of the tool.

View of rabbeted sections ready for assembly

Bassett Furniture Industries plants depend on Virginia Machine Tool Company to design and custom make milled-to-pattern knives to duplicate, to exacting tolerances, shapes desired in production runs. Slip cutters are used only for cutting samples. Bassett wants three things from a cutting tool (1) fast production (2) clean, sure cut (3) a knife that never changes its shape of cut for the life of the tool. That's why they turn to men with years of know-how who can look at a job to be done, then design and make knives that will meet their exacting requirements.

Bassett Furniture Industries has found VMT knives right for any curved surface, for any piece of wood. They know it's only necessary to sharpen face of knives and they give nick-less surface to take a good finish — eliminating any extra sanding operation. They realize it takes but a matter of set-up minutes and you're ready to cut — up to speeds as fast as 125 feet per minute.

What VMT Milled-to-Pattern knives can do for Bassett, they can do for you. Write, wire or phone us today. Ask for our new catalog — giving you complete details on all VMT wood-working tools.

Virginia MACHINE TOOL CO.

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A smart fisherman is careful with fire. When he lights up in a safe spot beside a fishing hole he breaks the match to be sure it's out. Keep Our State Green.

Humidity control of gas-fired kilns was frequently furnished by condensation moisture produced by burning gas. Many had no control of humidity nor added any moisture during the kiln drying process. Others were equipped with water or steam sprays which provided some measure of humidity control but not sufficient to equalize or condition lumber as is common practice in modern kiln drying of lumber. Humidity in many of these kilns was set to a base control by manually setting air vents in roof and fresh air intake. Final control was afforded in others by the use of water sprays extending the length of the kiln, which were automatically controlled by the wet-bulb on the controller, acting on an electric valve.

Oil-fired kilns generally used con-

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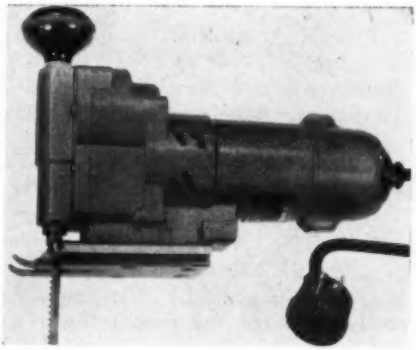
ventional steam spray humidity control. A typical system with automatic vent and steam spray controls uses compressed air to the steam spray valve to operate the dampers by means of a diaphragm lever motor. With springs properly adjusted, when the wet-bulb temperature rises above the control set point the steam spray is first shut off and, if required, the vent dampers are opened. When the wet-bulb drops below the set point, the dampers are closed before the steam sprays are turned on.

In another oil-fired external-blower kiln humidity was said to be accurately controlled and natural moisture from lumber saved by means of measured venting from the return air. With moisture from lumber used to supply the desired humidity addition of moisture was reported to be seldom required. Some condensation of damp air also occurred in the return air duct. The system was arranged so that wet-bulb controls actuated the automatic exhaust damper at the end of the return-air duct and a portion of the moist air was exhausted outside and fresh air was brought in, warmed and mixed to obtain the required humidity percentage prescribed by the drying schedule.

While some of the furnace-type kilns used water sprays for humidity control, those using steam sprays reported better convenience and efficiency of operation. Construction of many of these kilns contributed to leakage so that full advantage could not be taken of natural moisture evaporated from the lumber. Control was both manual and automatic, with the former in more common use in these smaller kilns of relatively cheap construction.

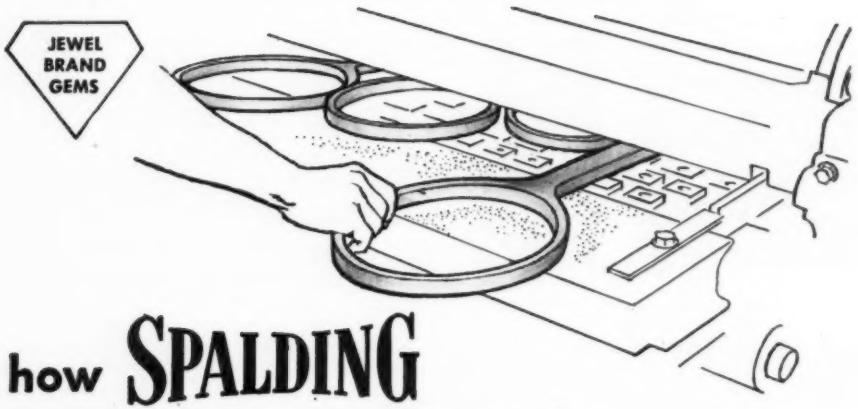
POWER SAW

Ruggedly constructed for heavy-duty jobs, Forsberg's new Whiz-Saw, model No. 2 easily cuts most materials up to 2" thicknesses.



The Whiz-Saw No. 2 is furnished with three blades and runs on 115 volts, 60 cycles, AC or DC current. Its powerful motor delivers 2,200 blade strokes per minute. It guides easily with one hand while making curved, irregular or straight cuts. Weighs only 6¾ lbs. Whiz-Saw No. 2 is a more powerful version of the original Whiz-Saw No. 1.

Manufacturer is the Forsberg Mfg. Co., 125 Seaview Ave., Bridgeport 1, Conn.



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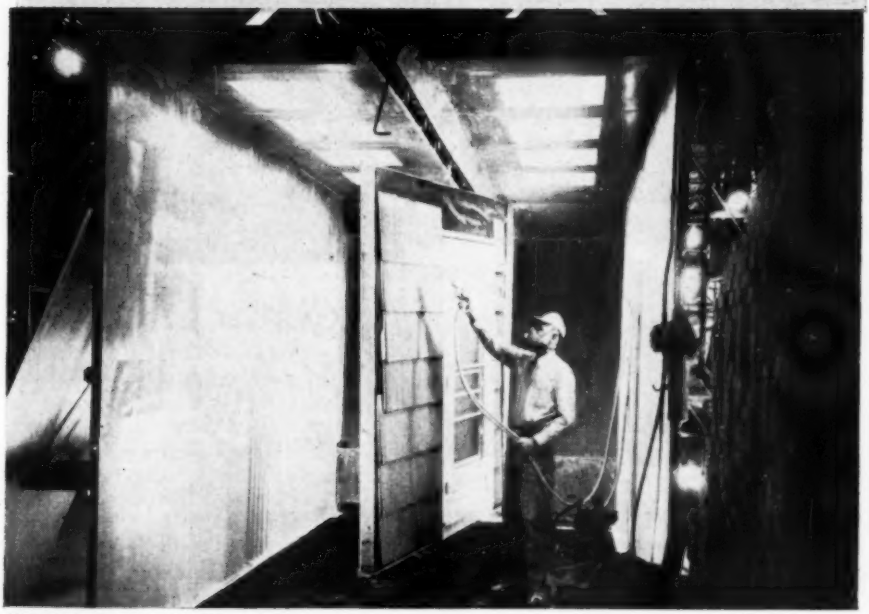

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How to Select An Abrasive

By C. A. Baker

Furniture Finishing . . . . . Part IV

By Harold B. Gatslick

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Part 4

HOW To Select An Abrasive

By C. A. Baker, *Supervisor Technical Service Department, Minnesota Mining & Manufacturing Co.*

A STATEMENT that opened this series of articles on how to select the right coated abrasives for wood sanding jobs is particularly appropriate for a closing article covering cabinet, finishing and rub room operations. Here it is: "A good finish is one of the best salesmen a furniture manufacturer has. If the final finish is not pleasing it detracts from the appeal of the article, regardless of its design, the amount of craftsmanship involved or the kind of wood used in its manufacture. . . ."

The "groundwork" for final finishing has been laid; coated abrasive components have been discussed, and in the third article white wood was moved through the sanding room. The wood has been brought to dimension on the drum sander, the stroke and edge sanding operations have been performed, it is ready for the cabinet room where the finished product will take shape.

Up to this point, sanding operations have been actually "taking away" from the white wood; from here on, each operation will "add to" the end product.

Cabinet room sanding is primarily a brush-up and blending operation. This is done by hand or portable machine to remove mars or scratches occurring during assembly.

Sandpapers used here and for subsequent operations are called "cabinet" and "finishing" papers, very flexible and lightweight to facilitate easy handling and "feather touch" sanding. Cabinet paper backings are usually made in "C" and "D" weights; finishing papers generally have "A" weight backings.

For blending operations, garnet, aluminum oxide or silicon carbide will do an effective job. All of the cabinet and finishing papers designed for "dry" sanding have glue bonds for reasons of economy, flexibility and subsequent conformability.

Although coarser grit cabinet papers may be used in initial scratch removal, it is important that the final grit used for blending be as fine as—or one grit finer than—the last grit used on a given work piece in the sanding room. Final blending is generally done with a finishing paper. Blending is an operation requiring skill, because it is difficult to match a machine finish by hand. Hand sanding in the cabinet room should be kept to a minimum to reduce the possibility of non-uniformity in the finished product.

Is Scuffing Important?

In the finishing room, immediately prior to staining or bleaching, a white wood article should be scuffed or "dusted" to remove fibres raised by changes in atmospheric conditions. Removal of these fibres will produce an

Scuffing should be done just before bleaching or staining. Purpose is to remove fibres raised by atmospheric changes.

even surface for stain or bleach penetration.

It should be stressed that such fibres must be "removed"—not simply pressed back into the wood or laid down. The most effective sandpaper for scuffing is, therefore, silicon carbide finishing paper, and the recommended grit is 280. The sharpness of silicon carbide assures that the fibres will be cut off, and grit 280 will do the job easily without detriment to the machine finish.

The cost of sealer sanding and sanding operations which follow can be greatly reduced by careful scuffing prior to the stain or bleach coats. Some manufacturers claim this simple operation saves up to 50% on subsequent sanding costs—and gives them improved finishes.

If a plant is not using the scuffing technique, here's an easy way to test its value. Prior to staining or bleaching, scuff a piece of furniture and mark it so it can be identified through succeeding operations. In this way it can be determined how much time the scuffing saves, and to what extent finishes are improved.

Silicon carbide finishing paper grit 280 is also used, following bleaching, to remove fibres raised by the bleech solution. If fibres are raised by staining, a wash coat is often applied to stiffen them for easy removal with the same type of sandpaper.

All scuffing is performed by hand—lightly—for the end purpose of obtaining the smoothest possible finish preparatory to filling or sealing. Filling is necessary on open-grain woods such as oak, walnut or mahogany to highlight the grain pattern and provide an even surface, but it is not normally required for closed-grain woods, such as maple and birch. Filled surfaces should not be sanded.

The smoothness of the sealer coat is dependent on the thoroughness of foregoing sanding operations. In a similar manner, the quality of the final finish is almost wholly dependent on the smoothness of the sealer coat, because this coat forms the base for the top coats which follows. The purpose of sealer

The sealer coat forms a seal between the finely polished wood surface and the top coats. Whether performed by hand or machine, sealer sanding is a vital operation.

This series of articles has been designed to help plant operating personnel in the selection of the coated abrasive that will do the most effective job most economically. The recommendations made are based on actual experience in the field, and are specific for most wood working operations. Frequently, however, special problems do arise, and these can best be solved by consulting the sales or technical personnel of coated abrasive manufacturers.

is, as the name implies, to provide a seal between the finely polished wood surface and the top coats.

Two types of sealer are in use. The most common type has a nitro cellulose filler which acts as a sanding lubricant. This type of filler is sanded most effectively with silicon carbide finishing paper grit 6/0 (220) by machine, or grit 7/0 (240) by hand.

The other type sealer has no filler to act as a lubricant, therefore a specially treated sandpaper-surface-coated with a lubricant should be used.

The purpose of the lubricants is to reduce abrasive filling, which is characteristic of sealer sanding; and the sharpness of silicon carbide will further minimize this problem, as will the open coat construction of silicon carbide finishing papers.

Sealer sanding, to be completely effective, must remove all nibs, orange peel and pock marks, leaving a perfectly level surface. If this is properly done, the smoothness of the surface will be assured by the recommended grit. The sanding is performed dry, by hand—with or without a sanding pad—or by machine. Of the types of portable machines available, one with a straight line action is preferable for sealer sanding to insure against cross-grain scratches.

What amounts to the second step in building a finish is the application of the first top coat. This is generally lacquer, natural resin varnish or synthetic resin varnish.

Points to Remember

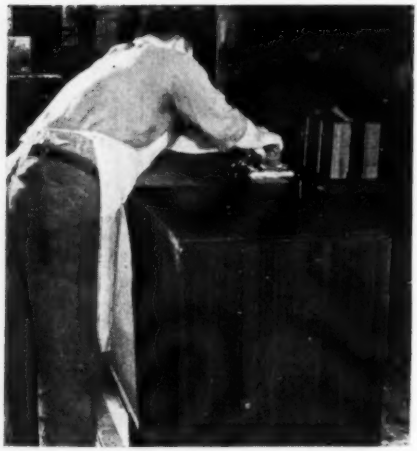
The only reason for using a finishing material such as lacquer or varnish is to protect the carefully finished texture of wood that had been properly sanded and sealed. The primary job of the final finish is to retain the beauty of the polished wood and guard it against scrapes and mars.

In rubbing the top coats, the characteristics of each must be kept in mind.

Lacquer, usually applied with a spray gun, must be thoroughly dry before rubbing to prevent shrinkage.

Natural resin varnish may tend to soften under lubricated sanding, since such varnish is often quite fresh when rubbed. The softening problem can be controlled by use of a low viscosity rubbing oil or wax emulsion, and by increasing the proportion of lubricant to thinner until no softening takes place.

Synthetic varnishes present a problem of their own. There can be no set procedure for rubbing them because of their varying characteristics. However, to obtain best results, two to four days of air drying, or about 45 minutes in a drying room at 130 to 145 degrees F., with controlled humidity, must be included in the rubbing procedure. Insufficiently cured synthetic varnish be-



Top coat rubbing must be a thorough operation—by hand or machine—to remove orange peel, flow marks or nibs.

comes streaked when sanded, and cannot be polished.

Choose Your Finish

There are four kinds of finishes that can be produced on lacquer or varnish top coats, each using succeedingly finer grits of sandpaper. For any of the four finishes all orange peel, flow marks or nibs should be removed by hand or machine, using a grit 320 or grit 360 waterproof silicon carbide finishing paper and a lubricant. From this point on, the individual finishes can be achieved by using the following procedures:

Dull satin: Following basic sanding, the piece is gone over with furniture cleaner and polish. Mouldings can be blended with fine steel wool, or 3F pumice applied with a brush.

Period satin: Basic sanding is followed with grit 500 waterproof silicon carbide finishing paper and a lubricant. Mouldings or low grain areas can be blended with very fine steel wool of 3F pumice and a brush. Finish the job with furniture cleaner and polish.

High sheen: After basic sanding, use grit 600 waterproof silicon carbide finishing paper with a lubricant. Mouldings and other hard-to-get-at areas can be blended with 4F pumice. Complete the job with furniture cleaner and polish.

Deep lustre: After basic sanding and the use of grit 60 waterproof silicon carbide finishing paper and a lubricant, apply furniture rubbing compound. Rubbing compound is available for either hand or machine operations. To complete the job use furniture cleaner and polish.

Rules For Lubricants

One of the variable factors in quality finishing is the use of lubricants in rubbing operations. The purpose of using lubricants with waterproof silicon carbide finishing papers is to minimize abrasive filling and loading, and to control the speed of cut in order to obtain finer finishes.

A general rule of thumb applicable to use of lubricants is that they should be as thin as practical to do an effective job. A water-thin lubricant offers the fastest cut. However, a lubricant that thin will not always impart the best finish to a given piece of furniture.

To determine the most effective viscosity for a lubricant, a suggested starting place is a 50-50 mixture of rubbing oil or wax emulsion and oleum spirits, varisol or safety solvent. A maximum dilution would be about eight parts of thinner to one part rubbing oil.

Naphtha or any other fast-drying solvents should not be used as a lubricant.

If water itself is used, it should be softened with a commercial softener, trisodium phosphate or detergents. A suggested mixture would be a tablespoon of softener completely dissolved in a gallon of water. Water makes an efficient lubricant only when it is soft enough to cling to a piece of waterproof sandpaper. However, its use is often

The final finish mirrors all previous processing. It can be no better than the quality of the individual white wood and finishing operations.

limited because of its tendency to lift exposed veneer and corner blocks.

Compounds and Application

Compounding of a surface is done either by hand or machine, using the type of compound designed for the specific operation. For machine compounding, the best results are obtained with a pile-type pad, followed by using a clean lamb's wool bonnet with cleaner and polish.

Whether for hand or machine use, compounds should be applied to the surface sparingly; yet, enough should be added from time to time to keep the surface moist. Too little compound will result in a burned surface (and one that will lack lustre), too much compound will slow the operation and waste material.

An important factor in machine compounding is speed. A machine operating too slowly will not polish brightly, and one which operates too rapidly may burn the finish. The recommended speed range for compounding is 1500 to 2000 r.p.m.

Since rubbing compound is in itself an abrasive, its selection is as important as that of the right sandpaper. Several types of compound are available for hand and machine rubbing operations, and selection is dependent upon both the color of the piece to be compounded (whether it is light or dark) and the type of top coat (lacquer, varnish or enamel).

Manufacturers' representatives are best qualified to recommend a compound for a given operation. It should be kept in mind that not all types of compounds give the same performance on all types of top coats.

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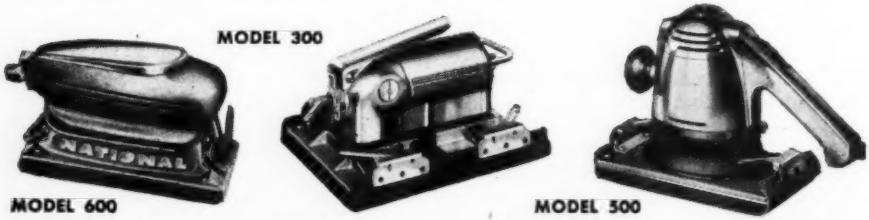

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NATIONAL AIR SANDER, INC., ROCKFORD, ILLINOIS

FURNITURE FINISHING

Part 3

By

HAROLD B. GATSLICK

PORTABLE sanding, rubbing and polishing machines have proven themselves money makers in many production furniture finishing operations. There is, however, no one machine in itself that is the answer or a complete substitute for hand work. Certain basic considerations must be remembered in choosing and using these machines. First it must be recognized that a machine should be chosen for a specific operation. There would not be such a wide variety of designs, weights, shapes and speeds if one type was the most efficient for all operations.

There are several portable pneumatic and electric sanders on the market, but, in general, they may be classified into two basic types. One type has a single pad with either straight-line or orbital motion and generally is used for small areas. The second type has two pads with reciprocating straight-line motion and is used for large surfaces. There are portable pneumatic machines available which operate at speeds up to 15,000 strokes per minute.

Most of these machines weigh from 5 to 30 pounds, so that no hand pressure is required and the machine merely is guided over the surface. Both types have numerous attachments which are interchangeable and therefore adjustable to almost all sanding and rubbing operations. It has been reported by some manufacturers that a wood surface can be sanded and rubbed by mechanical means in from 50 to 70% less time than by ordinary hand sanding and rubbing. Moreover, greater efficiency and life can be obtained from coated abrasive papers. Manufacturers have found it possible to employ women because of the reduced fatigue resulting from the use of these machines.

Portable sanders are being used successfully today in final white sanding, washcoat sanding, padding filler, sealer sanding and rubbing the final finish. After final belt sanding, the entire surface of a piece of furniture can be sanded with a portable sander using a hard felt pad or backing and a number 180 or 220 coated abrasive. Washcoats can be machine sanded with a soft rubber pad and a number 220 or 240 abrasive paper.

A reciprocating or straight-stroke portable sander can be used for padding fillers. A thin woven "wrap-around" felt pad is employed. Normally, the filler is padded sooner than with hand padding since the action of the machine tends to cause faster solvent evaporation.

Sealer sanding is done normally with a number 220 abrasive paper and a soft

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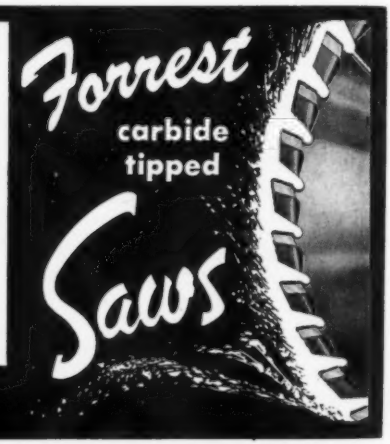

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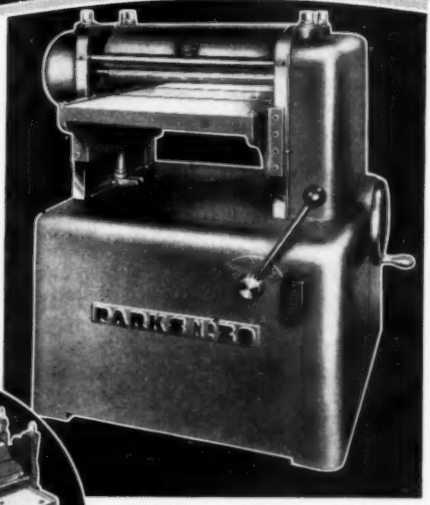

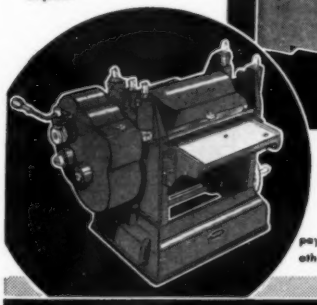

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Thirty pound pneumatic two-pad opposing stroke sander. This heavy duty machine is widely used for rubbing tops on quality furniture.

rubber pad as backing. Final machine rubbing varies with the topcoat material and the desired film luster. Wet and dry coated abrasives with grits from number 280 to 360 are often employed with a soft felt or rubber backing pad for initial cutting down of the topcoat. The lubricant can be water with a softener, or rubbing oil cut with oleum spirits or an equivalent solvent. A satin finish can be obtained by using a 500-grit wet or dry abrasive, 4/0 pumice stone or 4/0 steel wool. A high-luster finish can be obtained by rubbing with either a large or small machine using polishing compound, or rotten-stone. In many plants, rotary buffers are used for final polishing.

Portable electric belt sander. This type of machine, weighing 10¼ lb. with a belt speed of 1350 s.f.m., is used for white wood sanding on large panels, sills and doors.

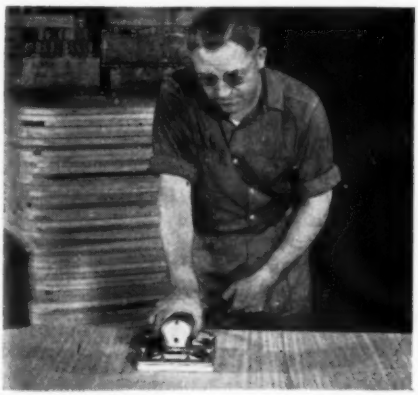
White sanding.—Many concerns are finding is desirable to sand all prominent face surfaces with one of the several portable machines using 150-grit or finer abrasive paper before the furniture goes into the finishing department. In general, however, the use of these machines is limited to removing press marks and other defects that might have developed during assembly. The lighter-weight straight-line stroke sanders find wide usage in white wood sanding.

Size or washcoat sanding.—Sizing and washcoating will be discussed in a subsequent article. It might be well to pcint out at this time, however, that for most production finishing sizing and washcoating are desirable to obtain an optimum quality finish where as the sealer is an absolute necessity for obtaining an acceptable finish.

Basically, the purpose of sizing is to raise the grain and then hold it in

Portable electric belt sander with dust collector attachment. The machine is here being used for white sanding unpainted softwood furniture.

place so that the protruding fiber walls can be cut off cleanly by a light sanding. Washcoats serve primarily to prevent discoloration of the wood by the oils and resins in the filler and provide a smoother uniform surface for filler



White wood sanding with a two-pad straight-stroke air-operated sander. This sander with a speed of 2500 1/2" strokes per minute can be used for either wet or dry sanding and is equipped with two valves, one for air and the other for oil or water rubbing lubricant.

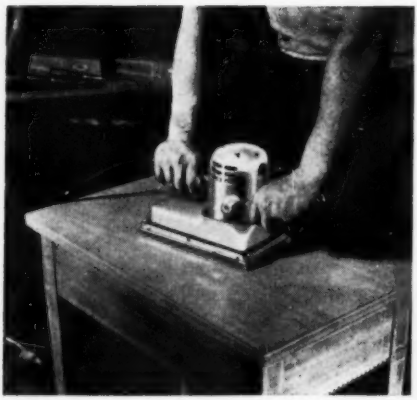
application. Since neither the size nor the washcoat are designed to provide build to a finish, a light fine-grit sanding is a must. A soft rubber pad with a relatively lightweight portable machine and abrasive grits of 220 and finer are commonly employed. The soft rubber pad minimizes the possibility of cut-through.

Filler padding.—Machine padding of filler is normally a less critical operation than hand padding since the machine action affects fast solvent loss and thereby reduces the time from filler application until padding. Heavier portable machines with orbital reciprocating or straight-stroke motion employing wrap-around felts have proven satisfactory in many operations.

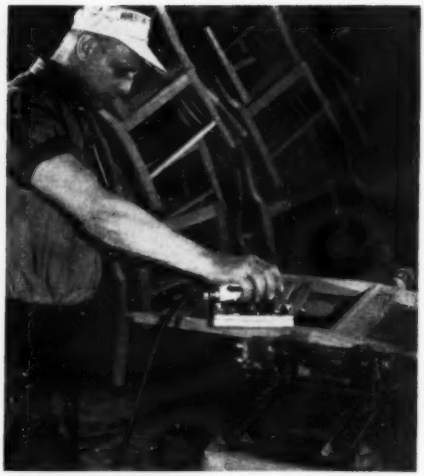
Orbital and disc sanders. The machine in the foreground is an electric 8 1/2 lb. orbital sander with an orbit diameter of 3/16". The 7" disc sander seen in the background is for rapid rough finishing.

A padding machine consisting of felt blocks mounted on a slowly revolving wheel reportedly does an excellent job of preliminary padding. This machine is moved back and forth across the surface while the revolving pads force the filler into the pores.

It might be well to emphasize that the filler pad should carry a heavy deposit



Electric orbital sander. This 8½ lb. heavy duty orbital sander can be used for white wood sanding of fine furniture.



Pneumatic orbital sander. This portable pneumatic sander is being used for white wood sanding of chair backs. The orbital speed is 5000-6000 strokes per minute with working air pressures from 65-75 lbs. Molded sponge rubber and felt pads can be easily interchanged.

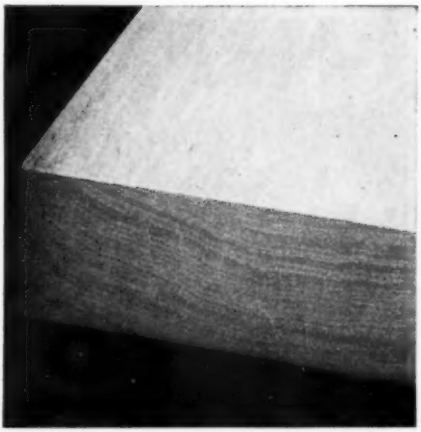
of moist—not wet—filler paste during the padding operation. The filling is then done by a shearing action in the paste itself and provides for a constant surplus of filler at the surface rather than a constant removal of filler as will occur if the pad is renewed or freshened too frequently.

Sealer sanding.—Since the sealer coat is the foundation for the final topcoats, it is imperative that a uniform leveling of the sealer be accomplished to obtain a quality finish. When properly employed, portable sanders can affect far greater uniformity than hand sanding. Medium to lightweight portable sanders utilizing a soft rubber pad as backing and abrasive grits 220 and finer are commonly employed.

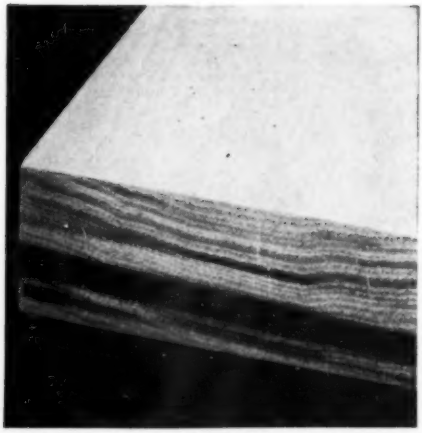
Any sealer variability, such as orange peel, that is not removed will only increase the irregularity of the topcoat surface and the final rubbing time and cost.

Rubbing and polishing.—Regardless of the quality of the finishing materials used or the care in application, the final topcoat requires a rubbing operation to produce the final smooth finish with a uniform appearance. The materials and the technique will determine the gloss effect. It might be a "dull-rubbed" finish which detracts from the new appearance of the finished article and is normally preferred on quality mahogany and walnut furniture of period design. The article may have a "high-gloss" finish which accentuates the wood variations and is preferred for "borax" type furniture. Numerous intermediate effects can be obtained dependent upon the species,

The next article in this series will cover such problems in surface preparation as raised grain and humidity control.



A Three-M-ite type belt did this perfect end grain edge-sanding job after 36 hours use, and belt still has a lot of cutting life left.



Ordinary edge-sanding belt, used for only 6 hours, scorched the end grain of this test panel—belt is now worthless.

STOP WOOD BURNING!

3M Belts give longer burn-free edge sanding

These pictures prove the amazing superiority of Three-M-ite type belts, which actually last up to *six times* longer than ordinary edge-sanding belts!

In this shop test, a Three-M-ite type belt and an ordinary edge-sanding belt were run to their end point. The belts were used on identical machines, the same kinds of wood were sanded. The ordinary edge-sanding belt dulled fast—after only 6 hours operation it started scorching the wood. The Three-M-ite type belt actually lasted for *37½ hours*, more than six times as long!

Reason for this amazing result is the extra sharpness of Three-M-ite belts. They cut faster, resist filling and loading, and produce finer finishes. And they operate cooler, because they are unaffected by the extreme heat generated in edge-sanding.

Yes, for best edge-sanding results, always use Three-M-ite belts . . . and be sure to specify 3M every time you order. For complete information, write for booklet, "3M System of Furniture Finishing," using coupon below.

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The final finish mirrors all previous operations

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An electric orbital sander being used for sanding a leather inlaid top. This machine operates at 5000 3/16" strokes per minute.

Single-pad straight-line pneumatic sander. A lightweight machine with 3200 5/16" strokes per minute being used for finishing repair work.

design and desires of manufacturers and consumers.

Rubbing is normally accomplished with prepared compounds or pastes containing lubricants and abrasives, or with wet-or-dry abrasive finishing papers. Powdered abrasives include pumice, tripoli, diatomaceous silica and rottenstone. The lubricants may be water, kerosene and water, white gasoline and water, rubbing oil or crude oil.

Rubbing can be accomplished by hand or by using portable sanding and rubbing machines. Cotton waste, felt pads, rubber sponges and cheesecloth are used in rubbing. Polishing or buffing is normally accomplished with wool, muslin or felt pads. Steel wool of various grades is often employed in initial rubbing, however, this technique may result in the imbedding of fine particles of steel in the surface which may later become apparent.

Heavier double pad stroke machines are generally preferred for rubbing and polishing tops whereas the lighter single and double pad straight and reciprocating stroke with speeds from 1100 to 3000 oscillations per minute are used for side work.

A recent study conducted by the Hercules Powder Company indicated that certain rubbing oils have a tendency to fluoresce under ultraviolet light, yielding a discoloration which many times

Sealer sanding with an orbital-action air-driven block sander. Various pads are available for different surfaces and types of work. The vibrationless action of this machine is well illustrated as the pad is blurred by the sanding action, but the top of the sander and the operator's hand are not vibrating.

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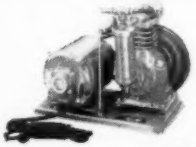
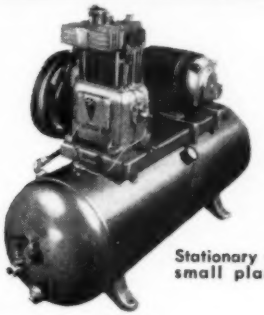
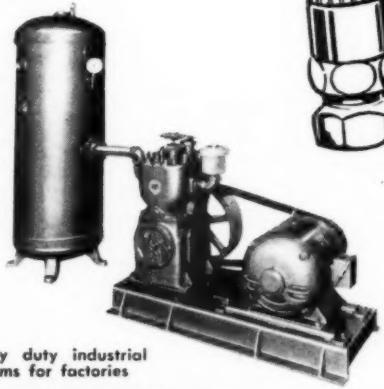


For light maintenance work



Stationary units for small plants



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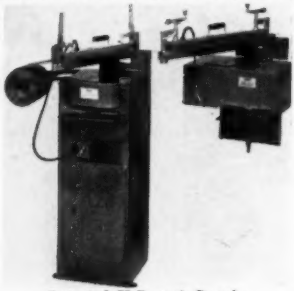

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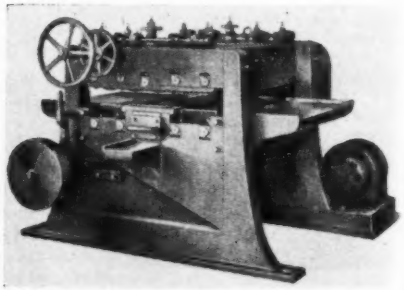
DETRO MFG. & SALES CO., INC., CULVER CITY, CALIFORNIA

Pumice and oil rubbing. Here is a two-pad medium-weight stroke, straight-line air-driven sander equipped with 3/4" thick side pointed felt pads. It operates at 2500 1/2" strokes per minute.

has been blamed on the nitrocellulose in the lacquer rather than the oil. White oils or heavily acid-treated oils have less tendency to cause discoloration and should be recommended rather than untreated naphthanic or lubricating oils. They also reported that paraffin oils have a lesser tendency to fluoresce than the naphthanic oils.

There are numerous manufacturers of portable sanding equipment and, in production work where a large battery of machines is required, pneumatically operated stroke units apparently have received the widest acceptance. Com-



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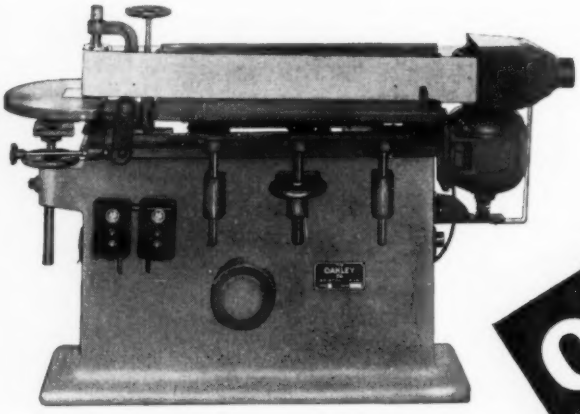


OAKLEY

QUALITY

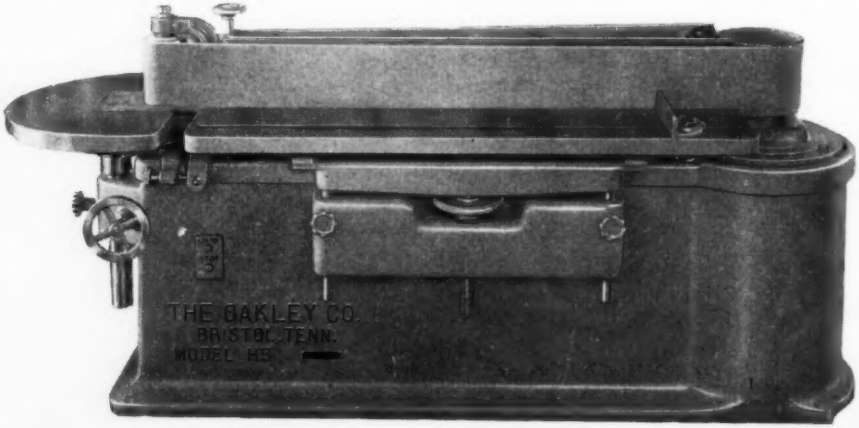
H-6 EDGE SANDER

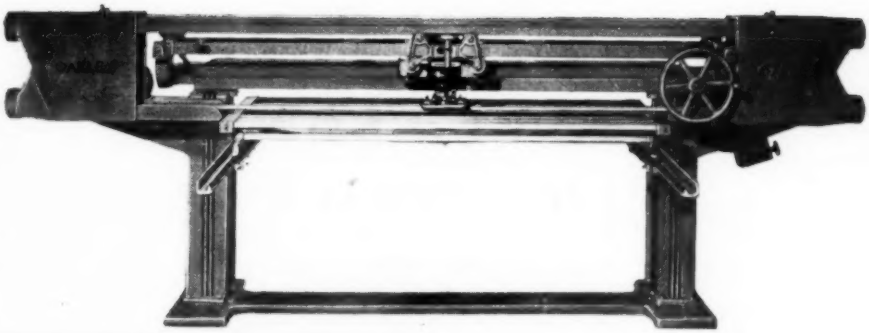
A light-duty yet sturdily built edge sander designed for plants where floor space is at a premium and where heavy equipment expenditures are not advisable. Also in those departments where the size of stock does not require larger machines. Made in 2 models. H6 is the oscillating type and the H-6A which is non-oscillating. The latter is recommended where the oscillation of the sand belt is not required.

H-5 EDGE SANDER

An edge sander for heavy duty operation without gears or other fast wearing parts to assure long trouble-free life. Quickly changed to accommodate various kinds of stock. Made in 2 models. H-5 is the oscillating type. H-5A is non-oscillating.

Pictured are a few of the many Oakley Sanders which have been designed and engineered from the standpoint of practical sanding practices. Here at Bristol on the Tennessee-Virginia border is an organization with experience and "know-how" . . . gained through years of work with plants sanding small toys to those who must sand large panels. Not only skilled in the art of sanding,





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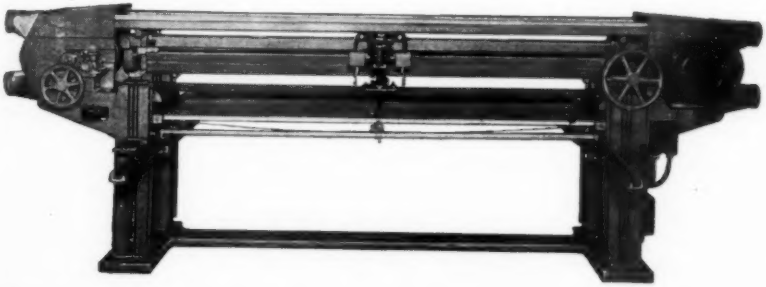
you'll find the folks at Oakley to be friendly and understanding as well. That's the reason hundreds of woodworking companies call upon Oakley for their sanding equipment needs. Having served many of these organizations year after year, Oakley is proud of its customers and its reputation for ability, integrity and "know-how". Write Oakley today. You'll be glad you did!

D SINGLE BELT SANDER

This Oakley can best be described as a high production, streamlined sander which is high in speed, semi-automatic, reversible, dust proof. Sanding capacity 6' 8", 8' 8" or 10' 8".

D-1 REVERSIBLE DOUBLE SANDER AND POLISHER

With a single handling, the Oakley D 1 double belt sander removes the tape, polishes, eliminates raised grain . . . without sponging or glue sizing . . . and the stock is ready for the finishing room. Sanding capacity 6' 8", 8' 8" or 10' 8".



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No toy, this handy 3¾ lb. professional tool outperforms and outlasts many larger more costly devices. Operating on ordinary 120 V. A.C. its fast straightline action and 20 sq. in. sanding area produce satin smooth finish right up into the corners. Strongly made. Fully guaranteed.

THE **WEN**

MODEL #404

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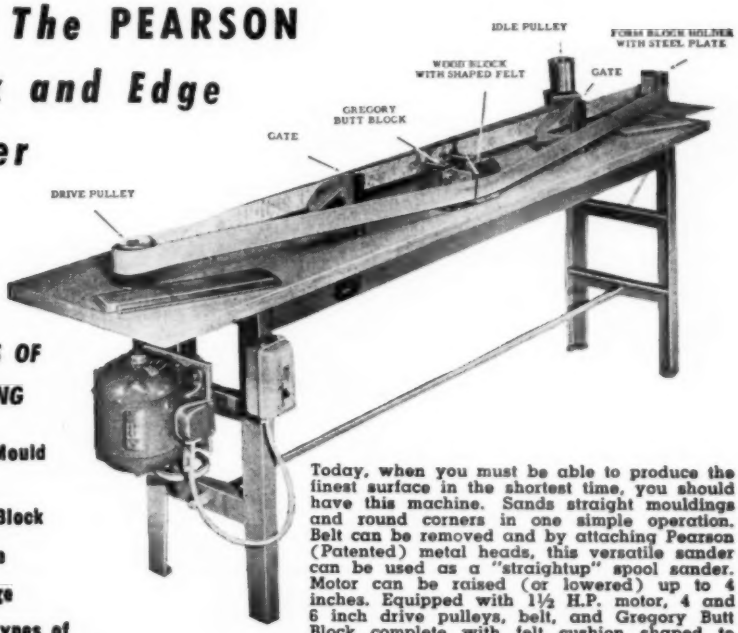
panies such as the Sundstrand Machine Tool Company and National Air Sander, Inc., have wide varieties of models to allow matching for specific job requirements. The preference for pneumatic machines stems from the possible reduction in maintenance as well as the basic cost of the unit. Reciprocating or straight-line action is preferred by many operators because of the reduced possibility of swirls and pressure marks.

Innovations in portable sanders are being made continuously. The Porter-Cable Model 127 portable electric sander incorporates a vacuum dust pickup system. It is claimed that in white wood sanding 91% of the wood dust is picked up, resulting in 25% faster removal of stock and longer sandpaper life.

The suction is derived from a high speed centrifugal fan mounted on the

Faster, Smoother Sanding With The PEARSON Block and Edge Sander



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Stationary Mould Block

Hand Slide Block

Curved Edge

Straight Edge

Spool (All types of curves)

Today, when you must be able to produce the finest surface in the shortest time, you should have this machine. Sands straight mouldings and round corners in one simple operation. Belt can be removed and by attaching Pearson (Patented) metal heads, this versatile sander can be used as a "straightup" spool sander. Motor can be raised (or lowered) up to 4 inches. Equipped with 1½ H.P. motor, 4 and 6 inch drive pulleys, belt, and Gregory Butt Block complete with felt cushion shaped to fit any one mould. Length of belt is 19 feet; table 24 inches wide. Overall length is 11 feet.

We Also manufacture Scroll and Drum Sanders.

Write for Complete Data

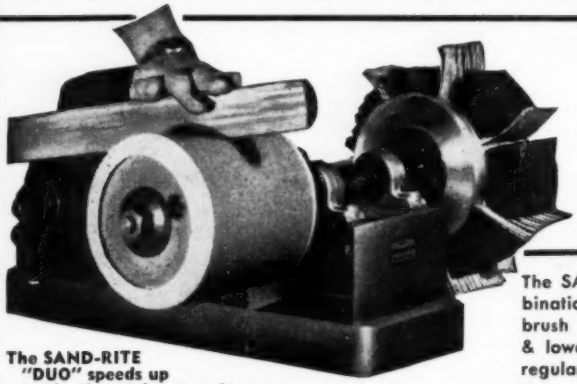
PEARSON SANDING MACHINE CO., INC.
HIGH POINT, N. C.

armature shaft. The motor has a separate cooling system for the fan and a metal skirt around the base creates a continuous air suction around the pad to exhaust the dust into the attached bag. The pad has a ¼" orbital motion and rotates at 4000 revolutions per minute. The manufacturer claims that the rotary action simulates hand sanding to make the machine equally effective with or against the grain and to eliminate scratch marks or gouging.

In the past year, the Dremel Manufacturing Company has put on the market a rotary motor-driven straight-line reciprocating-action sander which they claim will not gouge, leave lap marks or cut orbital swirls. This sander also features a unique paper holder assembly that detaches from the machine at a flick of the finger. Weighing approximately five and one-quarter pounds, the machine is designed for heavy duty production work.

The importance of choosing a machine for a specific job application can-

INCREASE SANDING PRODUCTION



USE A SAND-RITE "DUO" SANDER

The SAND-RITE "DUO" speeds up production at lower costs on:

- MOULDING
- FURNITURE TRIM
- GUN STOCKS
- CHAIR SEATS
- CHAIR LEGS & ARMS
- BRUSH HANDLES

WRITE TODAY FOR CIRCULAR

The SAND-RITE "DUO" is a combination pneumatic drum & rotary brush sander for faster sanding & lower costs on all types of irregular shaped & rounded contour wood products. Eliminate costly hand sanding & maintain top quality finishes by using the "DUO" Sander.

SAND-RITE MFG. CO.

Dept. W., 226 W. Schiller St.
Chicago 10, Illinois

ReNew

GIVES NEW LIFE TO SANDPAPER AND CUTS SANDING COST 50%

Keep your sandpaper cutting for you with ReNew. Apply . . . let it dissolve the pitch or resin . . . then brush it off with a scrubbing brush. It's so easy and quick and makes your sandpaper last at least 3 times as long.

ReNew increases sanding machine efficiency . . . paper lasts longer . . . less changes necessary.

ReNew is non-inflammable.

Buy it in 55 gallon drums at $2.85 per gallon, 5 gallon steel pails at $3.00 per gallon, or 1 gallon cans at $3.25 per gallon, F.O.B. Moline, Illinois.

MOLINE PAINT MFG. CO.

MOLINE . . . . . ILLINOIS

not be over-emphasized. All factors such as type of action, weight, type and size of pad, speed and grit size must be analyzed so that maximum operating efficiency can be obtained. Manufacturers' recommendations plus accurate observation of performance in other plants can help industrial woodworkers make the best choice for their own plant requirements.

Scraping machines—One technique of surface preparation which deserves mention and extensive investigation is the use of scraping machines. The scraper has only one stationary knife bolted to a knife stock. The machine in itself is quite similar in construction to a planer. The smaller machines have five feed rolls; the larger ones have nine. Scrapers are made in widths from 15" to 64". The machine is set to the thickness of the stock to be scraped.

New Efficiency

The sensational new FLEX-A-PRENE Paint Mask keeps out paint pigments and solvents with amazing efficiency, yet it's light (just 1 ounce), comfortable and so easy to talk and breathe through you hardly know you're wearing it.

New Economy

FLEX-A-PRENE's low first cost is only part of the story. Most important savings come from its endurance in service and time saved through less frequent filter replacements. You can expect at least 100 hours of exposure before replacement is necessary.

Sample: $1.50 postpaid
(INDUSTRIAL PRICE ONLY)

FLEXO PRODUCTS, INC. Cleveland 13, Ohio

The feed rolls propel the stock past the knife, which removes one continuous shaving the total width of the stock. This shaving may be from .001 to .006 of an inch in thickness. The feed speed is approximately 80 feet per minute. With the normal single-motor drive, the cost of upkeep and power consumption of the scraper is considerably less than that of a drum sander and the rate of feed is almost four times as fast.

The smoothness of a properly scraped surface is reportedly far superior to that of a sanded surface. New precision machines have been recently developed in Europe and are being used extensively there on softwoods and the less dense hardwoods. The limitations of this type of surface preparation are that precision sharpening and jointing are prerequisite and the scraping machine can be used only for flat surfaces. Today, with simplification in design and the gradual elimination of curved parts, detailed investigation of this technique would be in order.

SAW PATTERN PACKET

As an accessory item with its line of electric jig saws, Burgess Vibrocrafters, Inc. has produced a set of jig saw patterns.

All full-size, ready to trace on wood and saw out, the patterns include wall shelves and brackets, lawn signs, bird feeder, book ends, planters, costume pins, book marks, letters and numbers, key racks, toys, wall plaques, and many other items. A total of 119 patterns are included on six large sheets. The patterns are packed in an attractive envelope.

Complete details are available from the manufacturers, whose sales offices are located in their new plant at Grayslake, Illinois.

PACKAGING ADHESIVES FOLDER

Paisley Products, Inc. offers a free 4-page illustrated folder describing six classifications of adhesives for the packaging field. Subjects include carton sealing glues, case seal glues, bottle label glues, round container labeling glues, resin emulsion adhesives and wrapping & bundling adhesives.

This informative folder also describes Technical Service Bulletins which cover these subjects in even greater detail. There's full information on the Paisley laboratory control methods of manufacture, and on the Paisley adhesive operation data sheet.

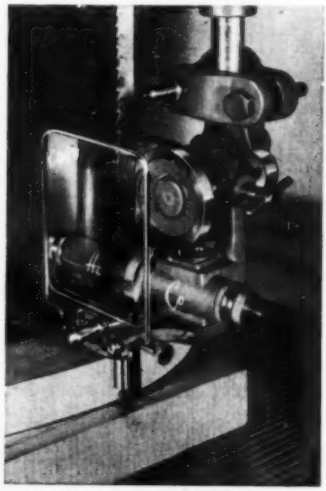
For copies of this new folder write: Paisley Products, Inc., 630 West 51st Street, New York 19, New York.

Traffic Officer: "What is your name?"

Red Light Passer: "Aloysius Sebastian Cyptian Popadulipasokiyetin."

Traffic Officer (putting away his book): "Well, don't let it happen again."

„HOCO"-GUIDES



For LONGER LIFE of BANDSAW-BLADES, GREATER EFFICIENCY and BETTER WORK with BANDSAWS . . . The NEW thoroughly engineered and tested „HOCO" ROLLER BANDSAW - GUIDES (For all sizes of blades)

Some of the outstanding advantages:

- Faster and more accurate work with the blade.
- Minimum wear, no cracks and considerable longer life of the bandsaw blades.
- No pulling out of line of the blades.
- Easy and quick installation possible on all current bandsaw models.
- Minimum maintenance required for the guides.
- Reasonable price for a life time of good service and better performance.

The „HOCO" bandsaw-guides are a master piece of SWISS QUALITY and PRECISION WORKMANSHIP.

We offer exclusive selling rights to DEALERS! For information, please write to: WERNER MAAG, U.S. office, 2011 Rosemont Ave. NW, WASHINGTON 10, D.C.

WHERE *Quality Counts*

Wabash

SMOOTHER ACTION SLIDES

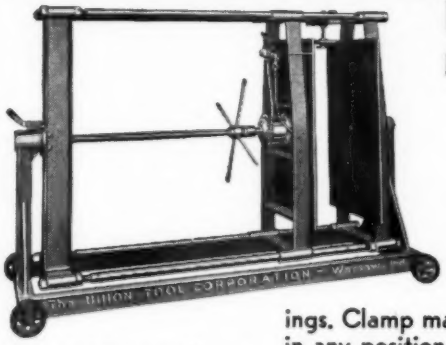
THE WOMAN chooses . . . and she selects tables that work smoothly . . . easily. That's why Wabash equipped tables sell better. Wabash Slides are precision made of hardwood . . . engineered for easy operation . . . with more than sixty-seven years of table slide "know-how" behind them. Write today for more information.

for your new patterns . . . consult WABASH!

B. WALTER & CO., INC. WABASH, INDIANA

Walter of Wabash

a UNION machine . . .
TO MEET ANY WOOD GLUING NEED •



UNION *Air-Operated
REVOLVING CASE CLAMP

With Self-Aligning Ball Bearings

Fast, dependable, accurate. Back platen is fixed. Operating platen equipped with oilite bronze bearings. Each platen measures 48" x 27". Distance between upper and lower rods, 60". Clamping frame cradled in self-aligning ball bearings. Clamp may be revolved to any angle or locked in any position.

*May be equipped for hand operation if desired.

•

Name of Union agent in your territory supplied on request.

•

Write for your free copy, "The How's and Why's of Wood Gluing," by Thomas D. Perry.

Union makes equipment for every standard production job in wood gluing. Also designs and makes machines for special applications—including machines for electronic gluing. Write for data on the complete Union line.

UNION SERVES OVER 2,500 SATISFIED CUSTOMERS

UNION TOOL CORP.

300 EAST MARKET ST., WARSAW, INDIANA, U. S. A.

USERS SAY UNION CUTS COSTS — SPEEDS PRODUCTION

New Literature

STARRETT CATALOG

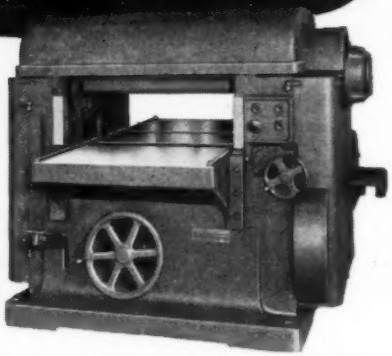
No. 27 in a series of complete catalogs issued by the company since its founding in 1880, the new Starrett 75th anniversary catalog is impressive for the number and variety of tools which it contains and the ease with which any one of the thousands of different items can be located. The new catalog features 85 new tools not heretofore listed plus all other additions to the complete line of mechanics hand measuring tools and precision instruments, steel tapes, steel rules, dial indicators, dial gages, hacksaws, band saws, band knives and precision ground die and flat stock manufactured by the L. S. Starrett Company, Athol, Mass.

All tools are described in detail with outstanding features highlighted. Instructions for using the tools and typical applications are both described and illustrated. The catalog also includes a reference section of tables and information of value to mechanics, machinists and other tool users.

TWEED FINISHES

Literature available from Raffi and Swanson, Inc., 100 Eames St., Wilmington, Mass., describes Tweed wood fin-

CRESCENT P24 PLANER



- 4 KNIFE CUTTERHEAD
- REVERSIBLE FEED
- 4 DRIVEN FEED ROLLS
- 5-7½-10 HP MOTORS
- SEPARATE 1-HP FEED MOTOR
- MAGNETIC STARTERS

A heavy duty, precision built single surfacer designed to produce a fine finish on a variety of planing jobs. Costly extra operations, such as rough sanding, are eliminated by obtaining a quality finish cut first on a Crescent Planer.

Join the many users, in Pattern Shops, Manual Training Schools, Furniture Factories and other Industrial Plants who have discovered that fast high speed planing with Crescent means low cost end products. For complete details of Models P-18, P-24 and P-36 Planers—*Write* for free Bulletin 204.

Mfrs. of—Circular and Band Sawmills, Power Feed Rip Saws, Multiple Cut Off Saws, Swing Cut Off Saws, Single Surfacers, Jointers and Band Saws.

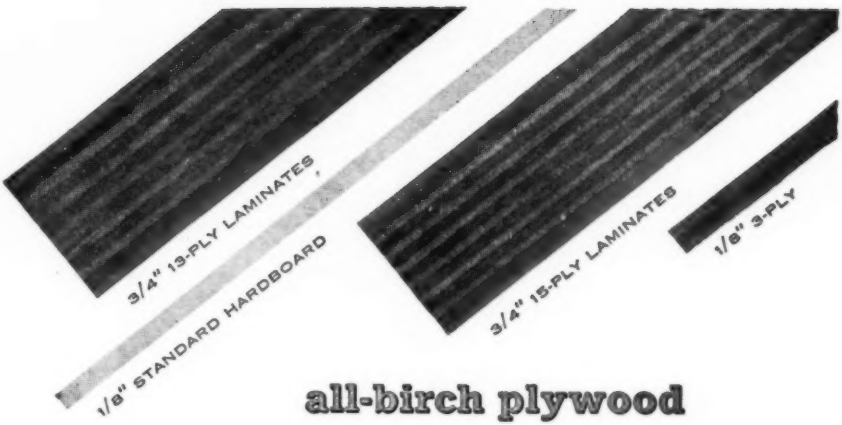
THE ENTERPRISE COMPANY
MACHINERY BUILDERS & ENGINEERS
SUBSIDIARY OF WM. K. STAMETS COMPANY · PITTSBURGH
COLUMBIANA 1, OHIO · U. S. A.

ishes and explains application. Tweed is both an industrial product finish and an architectural finish. Tweed is a multicolor finish with a tweed-like texture. This finish is a lacquer, tough, durable and waterproof. The colors are light fast and are particularly recommended for use where service is severe. These finishes are available in a number of color combinations.

Sample chips and literature may be obtained by writing to the manufacturer, Dept. WD.

BELLOWS CATALOG

Bulletin SP-50 has just been issued by the Bellows Co., 222 W. Market St., Akron, Ohio, to describe the Bellows air motors and valves. The 28-page "Spec-Book" includes more than 70 illustrations and 27 specifications charts. Complete dimensional details facilitate the application of Bellows air motors and valves to most any operation. Charts give size and capacity designations.



all-birch plywood

From the world-famous forest resources of Finland, imported all-birch plywood—sizes up to 4′ x 6′, all thicknesses . . . cut to size to buyer's specifications. • All-birch ¾″ 13-ply or 15-ply laminates for cabinet doors, table tops, etc.; lumber core for table tops; door panels of birch plywood (⅛″ 3-ply). • Also standard hardboard, ⅛″ thickness, with an exceptionally hard surface. • *Dependable deliveries from Finland's oldest plywood source. Quotations submitted—your inquiries invited.*

FINWOOD INDUSTRIES INC. Station Plaza, Ramsey, N. J.

DUST CONTROL

The Young & Bertke Co., 2235 Buck St., Cincinnati, Ohio, is offering a booklet on dust control. Almost all types of manufacturing today produce a dust or fume problem—so it is important to have a well designed and installed dust control system to prevent dust-caused breakdowns; save time; eliminate working fire and explosion hazards; guard against product and material spoilage; and protect the health and lives of employees.

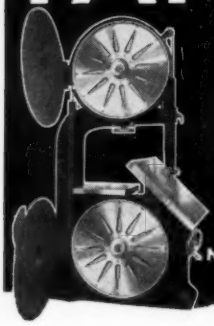
This informative booklet pictures and explains a variety of installations—from midget to giant size—in a variety of fields. It is not a textbook, but a valuable pictorial reference.

PHILLIPS INSERT BITS

A new booklet dealing with Hy-Pro Phillips insert bits and holders has been published by the Continental Screw Co., New Bedford, Mass. The 16-page booklet illustrates the holders and bits along with a description of their design and manufacture. Laboratory tests are pictured and results enumerated. The manufacturer guarantees economy and efficiency through use of these products. Write for your copy.

FOR HIGH-SPEED
SCROLLING and RESAWING

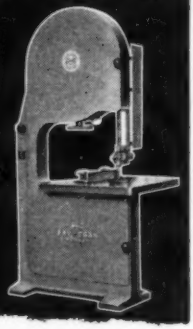
FAY & EGAN



FIRST CHOICE
OF MASTER
CRAFTSMEN
SINCE 1830

No. 940—24"
Band Saw

No. 950—36"
Band Saw



Typical of FAY & EGAN'S entire line of Woodworking equipment, No. 950 and No. 940 Band Saws cut production costs . . . time . . . troubles. Their rugged construction affords years of low-cost, trouble-free service. Carter de-mountable type wheels. Fully guarded for safety . . . finely balanced for top quality work. Metal cutting models also available.

Write for complete details

FAY & EGAN CO.
2023 EASTERN AVE. CINCINNATI 2, OHIO

CONTROLLED HUMIDIFICATION

Armstrong Machine Works, Three Rivers, Michigan, has recently issued a new 8-page illustrated humidification control bulletin written especially for the woodworking industries.

Bulletin No. 505 includes the following information: the changes in various woodworking techniques which have increased the necessity for humidification today as compared to years ago; the effects of relative humidity on woods; recommended EMC and RH for furniture and cabinet woods, interior and exterior millwork, veneers, hardboards, urea resin glues, veneer gluing, high temperature drying and sandpaper storage rooms.

Various tables, such as the effects of indoor heating upon relative humidity, shrinkage values of woods, RH and EMC for dry and wet bulb hygrometers and others are included.

DIEHL MOTORS

Bulletin M-155 on the new Diehl 6" and 8" molders has just been released

Onsrud Carbide Router Bits

You save cutter expense and time with ONSRUD carbide router bits—because you buy fewer bits and stop for sharpening less frequently. For hard or abrasive materials, synthetics, plastics and metals, these cutters are the last word. They often fill the bill where all others fail. The grade of carbide used in these bits is of proven quality, tough as well as hard to withstand the shock and vibration incidental to hand fed routing.

Write for illustrated ***BULLETIN*** *and* ***PRICES.***

Onsrud Cutter Manufacturing Co.

801-21 E. Broadway Libertyville, Ill.

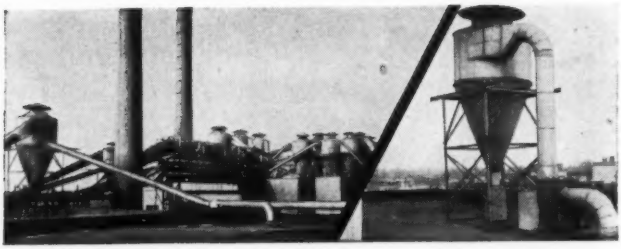
by the G. M. Diehl Machine Works, Inc. of Wabash, Indiana.

All the advanced features of the new Diehl moulder are described and illustrated in the bulletin, including the new variable speed drive, new feed roll assembly, new feed works assembly, new motor controls, new electrical control panel, new air hold-down, new chipbreaker arms, new top and bottom jointers, and other special features of interest to the woodworking industry.

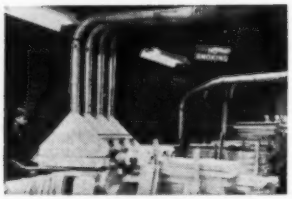
COATED ABRASIVES

Topnotch performance of coated abrasives depends to a large degree on the conditions under which the product is stored prior to its use, according to a booklet, "How to Store Coated Abrasives," prepared by Armour and Company, Coated Abrasives Division, Alliance, Ohio.

The backing and adhesive of coated abrasives are sensitive to climatic conditions and the rise and fall of a storage



FOR *BIG* JOBS OR *SMALL*
CHECK WITH **OBP for BLOW PIPE HANDLING SYSTEMS**



OBP systems feature low initial cost, are virtually maintenance-free, and give years of efficient service. These systems are installed without disturbing your production layout and without causing any down-time. Initial cost is surprisingly low, and maintenance is negligible. You get a clean plant, clean air, reduced fire hazard, increased working space, elimination of boxes, trucks, litter, dirt and confusion necessary with manual clean-up, as well as more desirable working conditions, greater production, and possible increased profits. Call an OBP engineer today.

We handle the complete job —
ENGINEERING – MANUFACTURING – INSTALLING

OHIO BLOW PIPE CO.

1717 DOAN AVENUE • CLEVELAND 12, OHIO

room's relative humidity causes strains to be set up between the abrasive and adhesive.

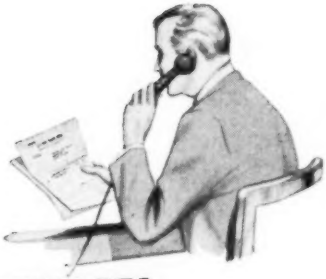
Further, when coated abrasives are stored under high humidity, they tend to fill and clog when put to use. If allowed to become too dry, the product will crack.

The 8-page illustrated booklet describes temperature and humidity limits for proper storage and suggests an ideal storage room location.

SAW BROCHURE

A descriptive and profusely illustrated brochure on the new Master-Monotrol 10" tilting arbor saw has just been made available by Boice-Crane Company, 931 W. Central Ave., Toledo, Ohio.

The folder shows saw construction as well as illustrations of utilizations. This company has been in the saw building business since 1916 and is recognized as a firm rich in technical know-how.



SHIP TODAY

* THE BEST SCREW HAS A SOUTHERN ACCENT . . . ON SERVICE

You want quality screws to keep your production cost low and your assembly line moving. But even the quality screw can cost you money by not being there when you need it.

That's why SOUTHERN accents SERVICE:

Prompt shipment from 600,000,000 screws in stock.

Secure Packing in containers especially built and sealed against loss in shipment.

One Source for your convenience. We save your time by giving you one source for all your wood screw needs.

Free Lubrication for Screws in bulk.

Write for free samples and stock list. Box 1360-D

WOOD SCREWS • STOVE BOLTS • MACHINE SCREWS • DOWEL SCREWS • A & B TAPPING SCREWS • ROLL THREAD CARRIAGE BOLTS • HANGER BOLTS

SOUTHERN SCREW COMPANY

STATESVILLE, NORTH CAROLINA

FACTORY WAREHOUSES: New York, N. Y. • Chicago, Ill. Los Angeles, Calif. • Dallas, Texas

SHELLAC SHORT CUTS

Just published and free to all who write for it is a 12-page booklet, "Short Cuts to Savings with Shellac." It consists of several hundred helpful hints of how to make something useful with things you most likely have around the house. The hints cover a wide variety of subjects from making a base for a lamp to decorations for the dinner table. Send a card or letter to Shellac Information Bureau, 65 Pine Street, New York 5, N.Y.

PAINT MASKS

A brochure by Flexo Products, Inc., 1468 W. 9 St., Cleveland, Ohio, describes paint masks that are light and easy to wear. These masks offer positive protection against paint overspray and yet have a simple 4-part design making them efficient and long-wearing. The folder illustrates the component parts of the mask.

The word "American" ends in "I can."

DMS HANDBOOK

Publication of a handbook on the Defense Materials System is announced by the Business and Defense Services Administration, U. S. Department of Commerce.

The 41-page booklet titled "The Defense Materials System in Our American Industry" is now on sale by the Superintendent of Documents, Government Printing Office, and the Department of Commerce Field Offices at 25c a copy.

Sinclair Weeks, Secretary of Commerce in "A Message for Industrial Management," that serves as a foreword, stresses the need for a "functioning material control system designed to permit rapid industrial mobilization in case of war.

"DMS serves this purpose," the foreword continues. "The rules have been made simple. All except the most essential paper work has been eliminated. Industrial contractors and subcontractors for programs of the Department of Defense and the Atomic Energy Commission have the responsibility for acquainting themselves with the few remaining rules and regulations.

"This manual is designed to aid in this task. It has been arranged so that each type of contractor and supplier may find a handy reference to the general rules applicable to his defense contract operations."

Key questions and answers on the essential points of the Defense Materials System precede the detailed description and instructions for defense contractors.

FLEXIBLE SHAFT CATALOG

Here is a 10-page catalog describing the Wyzenbeek line of flexible shafts, flexible shaft machines, saw attachments, hole cutters and related items. This new catalog is available from Wyzenbeek & Staff, Inc., 223 N. California Ave., Chicago, Ill.

The brochure is very well illustrated and describes a great variety of equipment.

HARDBOARD PRODUCTS

New 1955 12-page catalog covering all specifications and application instructions for 19 different hardboard products is now available from Forest Fiber Products Co., manufacturers of Forest hardboard products. Contents include detailed information and a description of each product, physical properties, economic advantages, interior and exterior procedure, bending and finishing recommendations, etc.

New products such as tongue and groove paneling, ¾" cupboard door and wardrobe door stock and new presealed temper-treated hardboard are also included.

Copies may be obtained by writing to Forest Fiber Products Co., Box 68S, Forest Grove, Oregon.

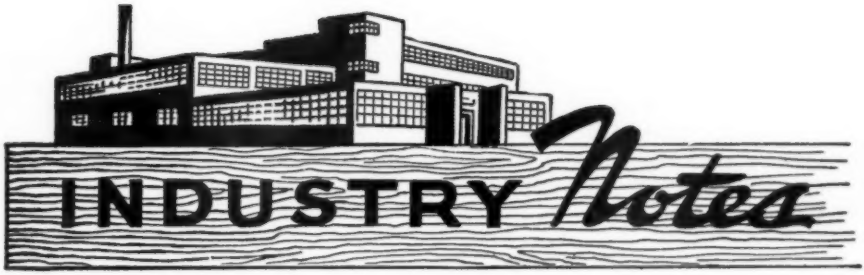
POWER TOOL BOOKLET

The Toolkraft Corporation, Springfield, Mass., manufacturers of the Darra-James line of power tools, has just announced publication of a new "Power Tool Handbook". This handbook contains 42 pages of most-needed information on major power tools. Dozens of photographs and illustrations show quickly and clearly, how to get the most out of the tools.

HARDWOOD BROCHURE

Latest in the list of publications prepared and distributed by the Southern Hardwood Producers, Inc., 805 Sterick Bldg., Memphis, Tenn., is a new 16-page brochure in full color titled "Southern Hardwoods for Paneling and Interior Woodwork."

In addition to the striking color pictures of paneled interiors, the booklet also outlines the important physical and esthetic properties of 18 southern hardwoods. Also included is information on how to specify hardwoods for interiors as well as details on finishing.



MANUFACTURERS ELECT

The Woodworking Machinery Manufactures Association met at The Homestead, Hot Springs, Virginia, April 20-22, for their fifty-fifth annual meeting.

Ray C. DuBrucq of Rockwell Manufacturing Company, was unanimously re-elected president for the current association year. Also re-elected were Jay H. Petter of Buss Machine Works, as vice-president and F. G. Walker of Jones Superior Machine Company, as treasurer. L. H. Geddes, Greenlee Bros. & Company, was elected secretary.

DEPENDABLE SOLD

The Dependable Machine Company, Inc., Greensboro, N.C., was recently purchased by local individuals, including the founder and former owner, John C. Inmon, and two former employees. During the past two years the company was owned by Robert H. Solem of Wisconsin Knife Works, Beloit, Wisconsin and A. L. Riche of Freeport, Illinois. Under the new ownership a new corporation was formed and the following officers were elected: Charles S. Routh, chairman of the board; John C. Inmon, president; Charles G. Monnett, Jr., vice-president and secretary; S. W. Inman, vice-president and treasurer.

According to a statement released by C. G. Monnett, Jr., vice-president, the company policy will be to build only the very highest quality woodworking machinery. The company plans to expand by adding additional machines to their line. Some of the new machines are now in the development stage. The company also plans to build special purpose machines to do unusual operations for which there are no standard machines available.

The lines now being manufactured by the company are molders, gang rip saws, shapers, hydraulic knife grinders, mechanical knife grinders, cutterhead grinders, carbide saw sharpeners, knife balancers, knife setting stands, knife jointing machines, blower fans, cutterheads and knives.

HPI SUMMER MEETING

The summer meeting of the Hardwood Plywood Institute will be held in Atlanta, June 16 and 17 at the Atlanta Biltmore, according to an announcement by Charles E. Close, managing director.

The location of the meeting will afford members the opportunity of visiting the HPI quality control laboratory, located in Atlanta, said Close. A special time will be allotted during the two-day meeting for a group visit to the "lab" where John Butler, laboratory chief, will explain the testing operations.

The Atlanta laboratory is the focal point of the HPI quality control program. Aided by reports of traveling field inspectors, the program checks into five key phases of hardwood plywood production: (1) moisture control, (2) jointing and splicing, (3) gluing and pressing, (4) finishing, sawing and

sanding, and (5) grading and labeling. Production of members which meet the rigid HPI standards is enabled to wear the certified quality label.

JOHN M. COOK

John M. Cook, 60, a pioneer in developing the abrasives industry, died recently at Beech Grove Farm, his home in Johnsonville, N.Y. He was vice-president and general sales manager of Behr-Manning Division of Norton Company, and a director of both those companies.

Mr. Cook was widely known throughout the abrasives trade and its user industries. Among the first to recognize the importance of the distributor in marketing coated abrasives, he was largely instrumental in building his company's far-flung distributor organization. As an inspirational sales leader, he devoted much of his energy in recent years to developing young salesmen.

SOUTHERN PLYWOODS, INC. TO MANUFACTURE "STELLABORD"

The special process ¼" gum hardwood plywood panel, formerly made by the Mengel Company at their Laurel, Mississippi plant and merchandised under the trade name "Mengelbord" will soon be marketed under the trade name "Stellabord," according to an announcement by Elmendorf Research, Inc., of Chicago.

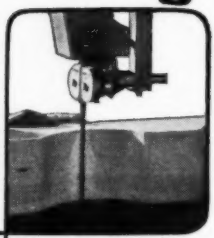
Elmendorf has licensed Southern Plywoods, Inc. of Greenville, Florida, for manufacture of this type of one piece face 4' x 8' x ¼" hardwood plywood. New special equipment for the "Stellabord" has been ordered and installation should be completed by the end of May. Initial production is anticipated in June of this year.

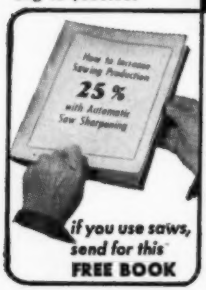
NEW PLANT FOR CRAWFORD

The first unit of an all new and modern furniture plant of the Craw-

25% to 40% faster cutting

Hundreds of industrial plants report actual increased sawing production of 25% to 40% and a higher quality work with use of Foley precision saw filing equipment. They get longer saw life, less breakage and lower maintenance costs. One firm reports an annual saving of $350.00.

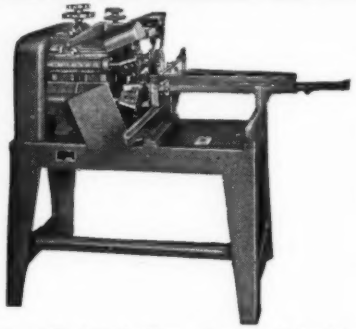




Proof of these savings is in a helpful 56 page book we have for you. This free book is based on many years' use of Foley Saw Filers in thousands of plants. It contains pictures and detailed data on how these firms save money—how you can benefit. Request Manual No. 100; no obligation.

FOLEY MFG. CO.
3351 N.E. 5th Street
Minneapolis 18, Minnesota

HARRIS
DELUXE FLOOR MODEL TENONER



New adjustment allows exact and simultaneous adjustment of tenon spindles.
3 H.P. Motor
3 Inch Blades
V Belt pulley drive on both tenon and cope spindles.
Heavier Construction for greater accuracy.

MILLBURY MACHINE COMPANY
13 WATERS STREET, MILLBURY, MASS.

ford Furniture Company has been completed in New Bethlehem, Pa.

The new plant will have 210 thousand square feet of manufacturing floor space when completed, and will have the latest production facilities available. An annual sales volume of ten million dollars is the goal for 1958, which will require a large amount of hardwood lumber. The firm specializes in solid maple, cherry and other native hardwood furniture in a wide range of designs.

KIRK & BLUM CELEBRATION

The annual dinner meeting of The Kirk & Blum Manufacturing Company's "25 Year Club" was recently held at the Cincinnati Club.

New members of the "25 Year Club" who were presented gold watches were B. J. Wilke and L. H. Stortz. The club now has 49 members with a total of 1505 years of service.

The company is located at 3100 Forrer St., Cincinnati, Ohio and has affiliated plants at Louisville, Kentucky and Indianapolis, Indiana.

OTTINGER FELLOWSHIP

The "Lawrence Ottinger Forest Products Fellowship Fund" has been established at the University of Washington College of Forestry by United States Plywood Corporation to perpetuate the name of the company's founder, Lawrence Ottinger.

The late Mr. Ottinger founded the plywood company in 1919. When he died, last December, he was chairman of the board and chief executive officer.

The perpetual fund will be devoted to creating graduate fellowships in the field of plywood, wood particle board and adhesive development.

Nearly 25% of the fellowship fund was made up of voluntary contributions by company employees and friends and colleagues of Mr. Ottinger.

C.I.T. Terms Available
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The Marvelous Montgomery

BLO-HOG (The only all-purpose hog in the world) Patents Pending

EATS UP EVERYTHING

. . . including Pine, Oak, Gum, Hickory, Elm, Cedar, Wet Veneer and Sandy Bark. Conveyor-fed — no attendant required. Positively protected from major damage by tramp steel. All connections locked — nothing to shake loose. Maintenance costs unbelievably low.

". . . Dear Mr. Montgomery: It is an unbelievable machine and it is still hard to believe that it is actually handling the enormous volume of scrap we are feeding into it. We operate the hog without an attendant—which means a considerable saving." — J. B. BLACK, Ocala Mfg. Co., Ocala, Fla.

Sumner Iron Works, Everett, Washington, W. Coast Rep.
Canadian Sumner Iron Works, Ltd., Vancouver, B.C., Canadian Rep.

Appointments

Harry Cubel has been named manager of the Chain Saw Sales, Atkins Saw Division of the Borg-Warner Co., Indianapolis, Ind.

Aetna Plywood & Veneer Company has named **Robert C. Williams,** general sales manager and **Donald M. Streckenbach,** comptroller.

F.M. Hughes has been appointed manager of production and sales for Forest Fiber Products Co., Forest Grove, Ore. Hughes has been with the company for 20 years.

Assistant sales manager in charge of plywood sales for the St. Paul and Tacoma Lumber Co. is **Wayne Earley.** Earley replaces Corydon Wagner III who has been assigned to the company's timber and raw materials division.

John D. Thompson has been elected president of Henry Disston & Sons, Inc., 115-year-old saw and tool manufacturer.

Minnesota Mining & Manufacturing Company has announced two appointments. **Howard F. Norman** has been made product manager, industrial trades and **August J. Kochis** is now government representative for the division and will headquarter in Washington, D.C.

Frank B. Benzon, president and general manager of Timber Structures, Inc. of California, Richmond, Calif., has been elected president of the American Institute of Timber Construction.

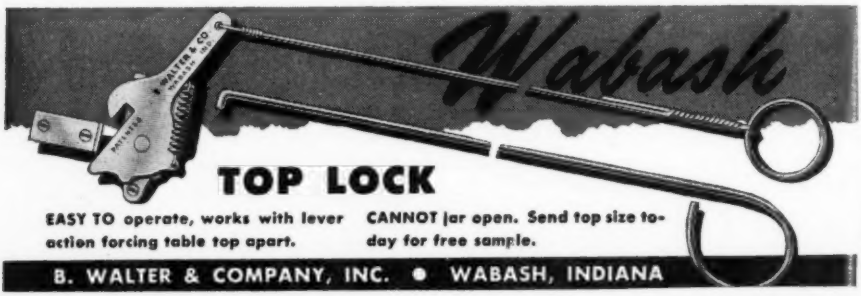
Appointment of **Herbert H. Clarke, Jr.,** as executive vice-president of the Borden Company's Chemical Division has been announced. Mr. Clarke has been vice-president and general sales manager of the division for the last year.

L. J. Bramble has been named sales manager of the Woodworking Machinery Division, Yates-American Machine Company.

Raffi & Swanson, Wilmington, Mass., announces the appointment of **Edward Van Romer** to the sales staff. He will handle the complete line of synthetics, lacquers and specialized finishes from his headquarters at 3154 Clinton Ave., S., Rochester, N.Y.

Clifford Stonecipher, well-known southern woodworker, joined the National Casein Company recently as a sales technician. He will sell and service the states of Alabama, Florida and Georgia.

Four vice-presidents have been appointed by National Starch products. **Dr. Carlyle G. Caldwell, John F. Fitzgerald, Dr. Robert W. Merritt** and **S. F. "Woody" Thune** are the new vice-presidents. Caldwell is vice-president of research; Merritt, vice-president of manufacturing; Fitzgerald, vice-president of Starch sales; and Thune, vice-president of the Midwest Division.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TOP LOCK
EASY TO operate, works with lever action forcing table top apart.
CANNOT jar open. Send top size today for free sample.
B. WALTER & COMPANY, INC. • WABASH, INDIANA

Willson Products, Inc., Reading, Pa., has elected new officers: **J. Clyde Ryan** is president and general manager; **Thomas A. Willson**, chairman of the board; **Thomas A. Willson, Jr.**, vice-president in charge of production; **William C. Weeks**, vice-president in charge of sales; **F. Saul Stump**, secretary-treasurer; **A. C. Morgenson**, assistant treasurer and **G. C. Guild**, assistant secretary.

DEAN EXPANDS SALES

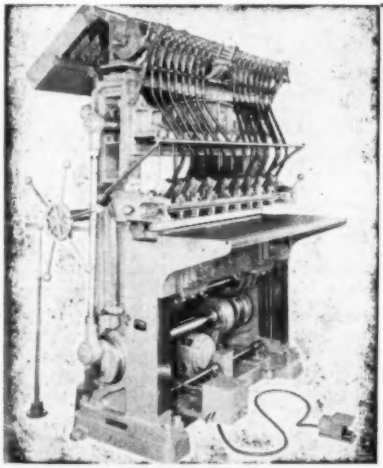
The Dean Co., Chicago has announced an arrangement with the Evansville Veneer Co. to merchandise the veneer production of the Evansville, Indiana plant, which includes walnut, oak, mahogany and other fine hardwoods. The Dean Co., which is one of the country's largest suppliers of hardwood veneers and lumber, also sells the output of its associated plants, Dixie Veneer Co., Norfolk, Va. and Olympic Mfg. Co., Gresham, Ore.

TECO GLUE SCHOOL

The 24th Teco short course in wood adhesives and gluing will be held August 22-26 at the lumber and wood products laboratory of Timber Engineering Company, research affiliate of the National Lumber Manufacturers Association.

The course is designed specifically for management and production personnel of the furniture, woodworking, and glued laminating industries. Lectures, demonstrations, and student participation concentrate on practical applications of the latest gluing, laminating, and quality control techniques that can be applied advantageously by each enrollee to his own gluing operations.

Complete information on the course and reservation forms are available from Timber Engineering Company, 1319—18th Street, N.W., Washington 6, D.C.



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THOUSANDS OF PROBLEMS HAVE BEEN SOLVED BY

DOIG AUTOMATIC NAILERS

Standard Doig Features

1. Anti-friction bearings.
2. Three separate motorized drives.
3. Nail feeder to handle nails from 1 to 3 inches without additional parts required.
4. Nail feeders to give 12 separate nailing combinations.

NEW FEATURES

A. Wheel on left allows operator to adjust back gage from operating position.
B. Solenoid trip permits operator to trip machine at any position desired.

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about equipment and supplies as featured by our advertisers in this particular issue. All of our advertsers will be glad to send information about their products, but we have listed the following firms because they have mentioned booklets in their advertising copy.

If you wish, circle the booklets you wish to receive and send to Readers' Service, WOOD WORKING DIGEST

ABRASIVE BELT SPLICER
Econaway Mfg. Co., page 168, Literature.

ABRASIVES
Minnesota Mining & Mfg. Co., page 165, Booklet.

ADHESIVES
Koppers Company, page 15, Literature.
Perkins Glue Co., page 69, Literature.

BITS & DRILLS
Greenlee Tool Company, page 130, Catalog 34-M.
Onsrud Cutter Mfg. Co., page 183, Bulletin.

CLAMPS & CLAMPING MACHINES
Adjustable Clamp Co., page 64, Catalog.
J. L. Taylor Mfg. Co., page 68, Catalog.
Hartford Clamp Co., page 128, Catalog.
Union Tool Corp., page 179, Literature.

CUTTERS & KNIVES
G.M. Diehl Machine Works, pages 16-17, Bulletin.
Jones & Orth Cutter Head Co., page 29, Catalog.
Saw & Knife Specialty Co., page 103, Catalog E.
Virginia Machine Tool Co., page 147, Catalog.

DRY KILNS
Standard Dry Kiln Company, page 18, Catalog.

DUST COLLECTING SYSTEMS
Aget Mfg. Co., page 175, Literature.

FASTENER DRIVING EQUIPMENT
Saranac Machine Co., page 28, Bulletin 167-DS.

FINISHES
Raffi & Swanson, Inc., page 152, Brochure.

GLUING EQUIPMENT
Black Brothers Co., page 7, Bulletins.

HIGH FREQUENCY BONDING EQUIPMENT
Radio Receptor Co., pages 8-9, Bulletins.

HOGS
Wm. Patent Crusher & Pulverizer Co., page 19, Brochure.
American Pulverizer Co., page 133, Bulletin.
Jacksonville Blow Pipe Co., page 189, Bulletin.

HUMIDIFYING EQUIPMENT
Armstrong Machine Works, page 106, Bulletin 505.

JOINTERS
Mereen-Johnson Machine Co., pages 78-79, Bulletins.
Boice-Crane Co., page 136, Catalog.

MOISTURE METERS
Weston Moisture Meters, page 14, Bulletins.

MOLDERS
Dependable Machine Co., page 6, Bulletin C-12.

MOTORS
S. A. Woods Machine Co., page 20, Literature.

NAILING MACHINES
Food Machinery & Chemical Corp., page 123, Bulletin.

PLANERS & SURFACERS
Buss Machine Works, Inside Back Cover, Bulletins.
Baxter D. Whitney & Son, page 11, Bulletin D1.
Parks Woodworking Mach. Co., page 161, Literature.
Fay & Egan, pages 116-117, Literature.
Enterprise Company, page 180, Bulletin 204.

PLYWOOD PRESSES
Hamilton Division, page 115, Bulletin HP-7.

RIPPERS
Mattison Machine Works, Outside Back Covers, Circulars.

ROUTERS
Porter Cable Machine Co., page 129, Manual.

SANDING MACHINES & EQUIPMENT
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Yates American Mach. Co., pages 108-109, Literature.
National Air Sander, page 158, Catalog.
Sand-Rite Mfg. Co., page 174, Circular.

SAW BLADES, SAWING MACHINES & EQUIP.
Beach Manufacturing Co., page 4, Literature.
Victory Carbide Saw & Tool Co., page 32, Catalog.
DaWalt, Inc., page 47, Booklet.
Mereen-Johnson Mach. Co., pages 78-79, Bulletins.
Fay & Egan, pages 116-117, Literature.
L. G. Alden Mach. Co., page 132, Literature.
Warwell Mfg. Co., page 135, Bulletin K-5.
A. W. Forrest Mfg., page 160, Literature.
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Moak Machine & Tool Co., page 205, Booklet.

SCREWS
Southern Screw Co., page 185, Sample.

SPRAY PAINTING EQUIPMENT
Binks Mfg. Co., page 167, Catalog.

STAPLE DRIVING EQUIPMENT
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TABLE EQUIPMENT
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TENONERS
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Mereen-Johnson Machine Co., pages 78-79, Bulletins.
C.K.L. Machinery Co., page 141, Catalog.

TRIMMERS
Wheland Co., page 27, Bulletin.

TRUCKS
Nutting Truck & Caster Co., page 103, Literature.

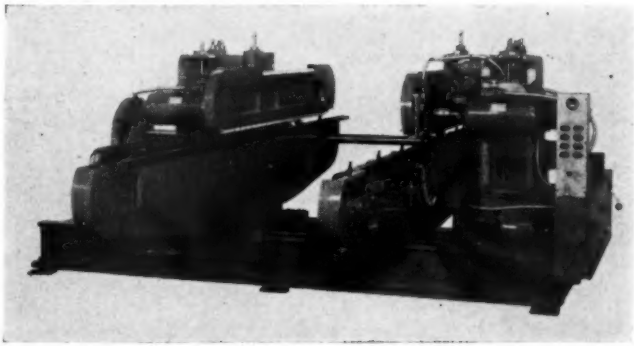
VENEER MACHINERY
Mereen-Johnson Mach. Co., pages 78-79, Bulletins.

WOODWORKING MACHINERY
Ideal Metal Products, page 31, Literature.

WOODWORKING TOOLS
Stanley Works, page 13, Catalog.
Ideal Metal Products, Inc., page 31, Literature.

EQUIPMENT and Supplies for the WOODWORKING INDUSTRY

DOUBLE END TENONER BY C.K.L.



The C.K.L. Machinery Company, Oshkosh, Wis., has designed a model 520 tenoner for small and medium-sized cabinet, millwork and furniture manufacturers. This new tenoner is regularly equipped with two 5 h.p. trim saw motors, four 3 h.p. tenon unit motors and two 5 h.p. cope motors. A plain or jump dado arbor can be mounted in place of the tenon units, but not both, since the machine is of single-post construction. The copes can also be furnished in high speed, 7200 r.p.m., type, and also with a jump feature, as required. All cutterhead units are available in larger horsepowers.

The feed motor is 2 h.p. and feed rates of 16 to 64 f.p.m. are controlled by adjusting the varidrive unit by handcrank. The traverse motor for moving the movable base is ¾ h.p. and has an electrical drum control with hand-wheel for final close-setting. The glass-covered length-measuring dial is direct-reading in inches and fractions.

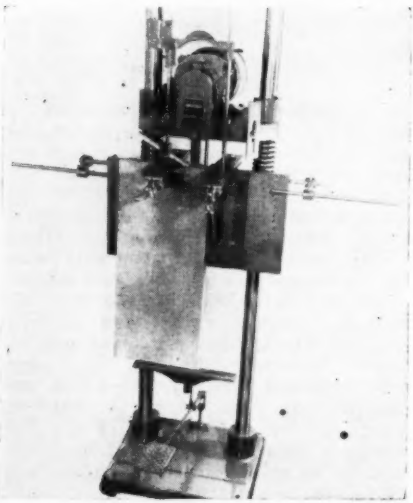
The feed chains—an important factor in the accuracy of a double-end tenoner—are precision-built throughout, and ride in V-tracks which have the wear surface lined, with long-wearing Insurok material. Standard feed dogs 1½" high are regularly furnished, and the lift-type dogs can be provided for quick set-up. Lubrication of the feed chain is handled by a sight-feed oiler and brush arrangement in contact with the chain V-wear surfaces at all times.

Each motor has its own automatic safety switch controlled by push buttons mounted on a panel handy to the operator. The feed can be controlled by push buttons located on the infeed beam loading position and also at the back end of the switch cabinet. The feed works is interlocked with the control mechanism so that the feed automatically stops if there is a stoppage due to overload of any motor on the machine. All switches are mounted in steel cabinet, and tripped overloads may be reset without moving the cover.

U.S. OFFERS CHAIN MORTISER

The U.S. Cutting Chain Manufacturing Co., 95 Spark St., Brockton, Mass., recommends its new chain mortiser for store fixture, cabinet and sash manufacture as well as general millwork. Each plunge of the head, operated by foot feed and double spring return, results in a complete pocket or mortise for sheave, sash balance or tenon. Stock up to 3" thick by 42" wide and any length can be accommodated on this stationary fence.

Standard motor sizes for direct drive to mortise gear are: 1 h.p.—110/220v.—1 p.—60 c.; 2 h.p.—220/440v.—3 p.—60 c.; and 5 h.p.—220/440v—3 p.—60 c. Adjustable stops are provided for location and depth of mortise in stock. The compound table attachment with rack and gear to slide table by handwheel for travel up to 6" without unclamping the work is available at an extra cost.



An adjusting screw permits locating motor head and mortise gear to the center of 3" stock. Quick acting clamps speed operation in store fixture panels for sheaves—or in assembled sash for spring balance or on compound table for general millwork.

NEW 14" TILTING ARBOR SAW

This extra capacity tilting arbor saw has just been announced by The Walker-Turner Division of the Kearney & Trecker Corporation, Plainfield, New Jersey. This new machine cuts 5" deep with 14" blade, makes a 3⅛" cut at 45° angle, according to specifications issued by the manufacturer. The 1" diameter saw arbor will take a dado head up to 1½" with adaptor.

This new saw is one of the company's "Light-Heavyweight" line which also includes new 8", 10" and 14" models. It has a specially rigid motor-and-arbor mounting that permits motor and arbor to tilt as a unit. Guard and splitter remain automatically aligned with the saw blade, and leaves of the guard operate independently, giving full protection even on 45° cuts. Guard is

equipped with anti-kickback pawls, one of which remains in contact with the work even at 45° tilt. Arbor-and-drive unit is swung by handwheel, stops at 45° and 90°, and has pointer and graduated scale. All controls operate from the front of saw.

Table is 38¾" deep and 48" wide, with up to 32" between blade and rip fence on right, and 17" from front edge of table to start of cut when saw is fully raised. Table has miter-gauge T-slots on both sides of blade.

This new saw is available with two types of motors: 5 hp 220 volt three phase, or 3 hp 220 volt single phase. Speed with either motor is 3450 rpm-12,600 rpm.

JUNIOR COMET SAW

Consolidated Machinery and Supply Company, 2033 Santa Fe Ave., Los Angeles 21, California, manufacturers of the Comet radial arm saws has recently made available a new model of their 1½ h.p. Junior Model Comet saw. This new model has a number of design changes.

A new starting switch close to the pull handle, right at the fingertips of the operator, is a very important safety feature. The machine now raises and lowers from the front, so there is no need to reach behind it to set it into position for making cut. Each turn of the handle raises or lowers it 1/16".

Large red dial plates placed in convenient position easy to read and see, for making various cuts are also an innovation.

There is a redesigned streamlined saw guard with anti-kick back dogs which is adjustable up or down forward and back. The saw dust chute is located higher on the guard for greater efficiency. A new wider cutting table has been added, which is always clear to receive material because of the retractable arm.

Too many of us conduct our lives on the cafeteria plan—self-service only.

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from our
70 YEARS OF KNIFE MAKING EXCLUSIVELY

DETROIT KNIVES

PLANER-MOULDER
VENEER-CLIPPER
SHAPER STEEL

Since 1885 we have devoted all our efforts and facilities to making better machine knives, exclusively.

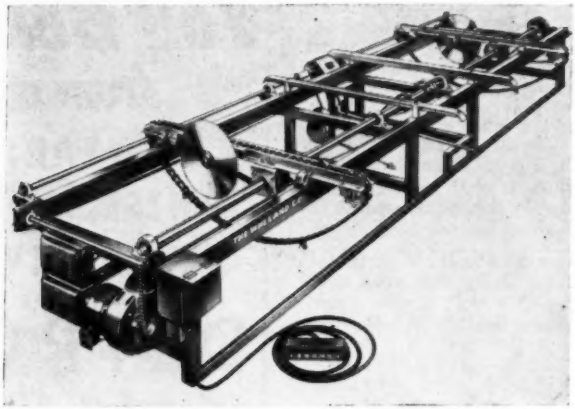
As a result we have, for many years served an increasing number of leading mills and manufacturers to their entire satisfaction.

Try DETROIT knives — you'll like them.

Better knives since 1885

DETROIT EDGE TOOL CO.
6570 E. NEVADA
DETROIT 34, MICHIGAN

WHELAND AUTOMATIC ELECTRIC SHIFT TRIMMER



This trimmer manufactured by the Wheland Co., Signal Mountain Rd., Chattanooga, Tenn., features true push-button control. Simply punch the buttons and the trimmer shifts easily from one station to another.

Other special features offered by the manufacturer include: ease with which saws can be changed; all shafts fitted with Standard ball bearing pillow blocks ; steel tubular frame holds vibration to minimum; and arbors are built so lead can be put in them.

The Wheland No. 55 automatic electric shift trimmer can be furnished either right or left hand. Standard model trims in multiples of 2'. Models to trim in multiples of 1' can be obtained on special order.

PANORAMIC VISIBILITY

An entirely new concept in lift truck engineering, the Hyster Monomast, a revolutionary design consisting of one mast, will be introduced nationally during July, according to an announcement by the Hyster Company, Portland, Ore. The Hyster lift truck creates exclusive panoramic visibility never before possible with conventional upright assemblies. Monomast engineering consists of two box-type sections, one telescoping within the other.

The new unit allows the operator a clear, unobstructed view to both forks and load, permitting faster operating speed and reducing driver fatigue. Additional operating advantages offered are faster maneuverability, faster approach, more accurate load placing and safer load handling.

Total weight of the Monomast upright is about the same as standard type assemblies, but its tubular design is acknowledged to be exceptionally strong.

The Monomast design allows a 15% increase in hoist speed. Load raising speed is now 58 f.p.m. with a corresponding increase in load lowering speed. Slight horizontal carriage flotation is a desirable feature which permits the lift truck to angle back out of tight positions after load depositing.

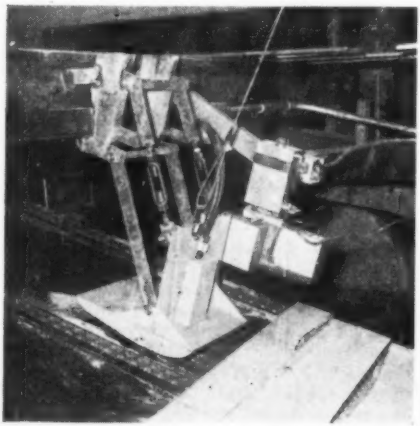
A piston-type cylinder with a new self-adjusting packing gland minimizes possibility of oil leakage and extends packing life. Life of cylinder and packing is also extended by full protection from dirt and mechanical damage.

All standard hydraulic attachments

can be mounted on the Monomast attachment carriage; non-hydraulic attachments are also available. The Monomast mounting is conventional and can be field-installed on current three and four-thousand-pound Hyster models UC-30 and YC-40 without alteration.

CONTINUOUS MOISTURE DETECTOR

To provide automatic continuous moisture detection at the unstacker location, Laucks Laboratories have designed a special "shoe-type" electrode



Starrett

BAND SAW BLADES

'SKIP-TOOTH"

Unsurpassed for fast clean cutting of hardwoods, softwoods, plastics, fibre, wood substitutes.

REGULAR

For all types of band saw machines. Furnished cut to length and welded or in coils in handy reel dispenser.

Order Through Your Distributor Or Write for Bulletin "WW" Which Gives Complete Information.

Starrett

THE L.S. STARRETT COMPANY · ATHOL, MASS., U.S.A.

Reduce Costs by assembling your products easier and stronger with "Rockford" Quality Controlled Threaded Fasteners.
We manufacture a complete line.
Cap and Set Screws
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Carriage Bolts
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* Made in Slotted or "Rockford-Phillips" Heads
"Quality Controlled" Products
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ROCKFORD, ILLINOIS
Phone: 4-9441 or Teletype: RK 88

which, mounted on a pantograph device, will scan approximately 14" of each board. Laucks' engineers state that such an arrangement will catch 95% of the overwet or overdry boards, due to the fact that moisture generally occurs in streaks which extend the entire length of the board.

The "shoe" houses the electrode itself. Use of the XA-S, the model shown, does not impede production, but makes it possible to adjust drying schedules to peak performance, automatic and continuous sorting for moisture is afforded and operators are able to "upgrade" their entire production.

The "shoe-type" electrode can be adapted to any of the standard Laucks Sentry continuous moisture detector control units. Complete information is available from the company, Dept. WD, 1201 Poplar Place, Seattle 44, Wash.

People, like boats, toot loudest when they're in a fog.

MISENER HOLE SAWS

This line of saw blades is being offered by the Misener Manufacturing Co., Inc., 202 Walton St., Syracuse 2, N.Y. The saw will cut 2" deep and is especially designed to cut through floors, beams and partitions where wood thickness has heretofore presented a hole-cutting problem. The coarse tooth blades are

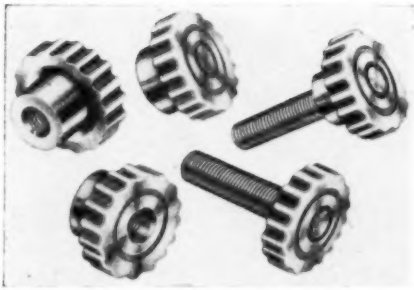
well adapted for this cutting operation.

Literature is available from the company giving all specifications: Depth of blade; depth of cut and prices.

FASTENERS

Newly-developed, die-cast round-head thumb nuts and screws for replacement or adjustment applications have been announced by Gries Reproducer Corporation. Designed with a wide head for ease of grip, and cast in zinc alloy, they are an entirely new type of standard threaded fastener.

Several other advantages stem from the idea of producing these fasteners as zinc-alloy die castings. These new GRC fasteners are cast with smooth, rounded scalloped edges that are comfortable to grip. Because cast zinc alloy is non-ferrous, they are rustproof and corrosion resistant. For a great many applications, these new GRC thumb nuts and screws can be used without a protective finish;



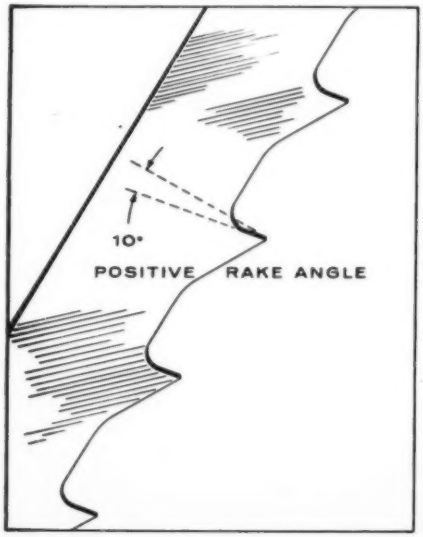
they are, however, also available in all commercial finishes.

Among the uses for these new adjustable fasteners are baby carriages and furniture, outdoor furniture, knocked-down furniture, storm windows, and display fixtures.

Information bulletin available from Gries Reproducer Corporation, 400 Beechwood Ave., New Rochelle, N.Y.

HOOK TOOTH SAW BLADES

The Henry G. Thompson & Son Co., New Haven, Conn., has announced a new "hook" tooth band saw blade for use in wood, plastics and non-ferrous



FIELD

CHAIN MORTISE

CUTTING EQUIPMENT

A TOOL ROOM Product
By A Tool Room Expert!

Use our double bearing guide bars for flat bottom mortises. The riveted plate and bearing construction provides the utmost in strength and interchangeability. More than 90 standard and many special sizes of cutting equipment in stock. We are well-equipped to furnish special sizes like the above bar in many widths and lengths.

Write for complete information on our chain mortising equipment.

WILLIAM H. FIELD CO.
327 Dorchester Ave. Boston 27, Mass.

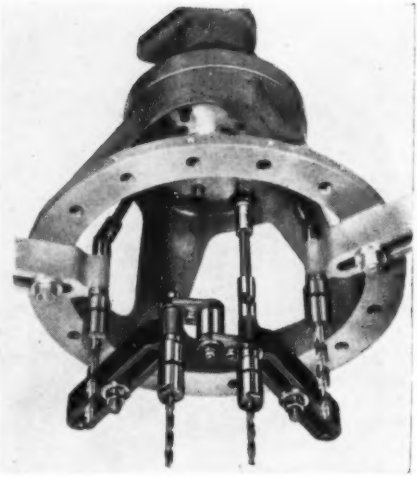
metals. Teeth are widely spaced—2 to 6 per inch. Each tooth has a positive rake which hogs into the work, thereby permitting a very rapid rate of feed and exceptionally free cutting.

The blade has a flexible back with each tooth hardened to 62-65 Rockwell C. The blade is available in standard widths from ¼" to 1", in 100', 250' and 500' coils and cut-to-length welded bands.

"TWIN-SPINDLE" ATTACHMENT

A new "twin-spindle" attachment for the Commander multi-drill, which permits driving two collet type spindles from any one of the multi-drill spindles, has recently been announced by the Commander Manufacturing Co., 4225 W. Kinzie St., Chicago.

The new "twin-spindle" attachment, in effect adds an extra spindle for each of the multi-drill's standard six or eight spindles, enabling the user to drill



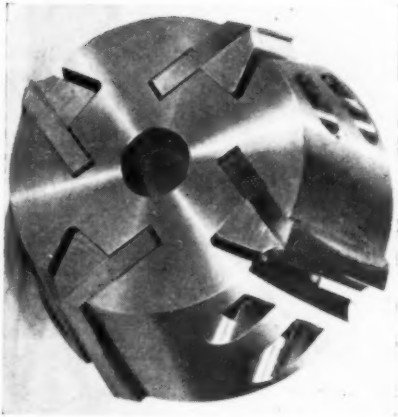
up to double the normal number of holes at one time.

A unique direct gear train provides maximum efficiency for the driven spindle, yet permits setting the two spindle centers as close as ⅞" and a maximum of 3" wide. The unit is available for all models of the Multi-drill.

VIRGINIA NOW OFFERS CARBIDES

After having tools successfully proven on-the-job in plants from Florida to New York for over a year, Virginia Machine Tool Co. of Bassett, Virginia, is now in full operation in the carbide field. Operations include reconditioning, re-tipping and sharpening carbide saws, manufacturing and re-conditioning carbide tipped router bits, router cutters, groovers, and milled-to-pattern knives.

According to W. W. Sale, president, this expansion has been made in the interest of the companies using carbide tools primarily for plastics, Formica, veneers and heavy glue lines and hard and soft woods. The department is also equipped to furnish all types of heads for shaper and milled-to-pattern knives as well as to design and make heads for special jobs and shear cut work.



Shown here is a typical custom-made head with a 15 degree taper angle and 15 degree shear angle and carbide tipped corrugated back knives, designed and built for the Stoneville Furniture Company, North Carolina by the Virginia Machine Tool Company's new carbide department.

"BOB TAIL" GLUE SPREADER

Black Brothers has supplemented its line of hand feed glue spreaders through the inclusion of the modified No. 22-D arrangement shown here.

This "Bob Tail" model, designed for edge gluing lumber stock or other special applications which call for bottom coating only, has essential features for

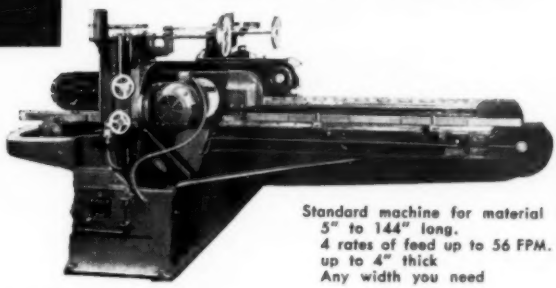
Jenkins

CUTOFF SAWS

82 YEARS OF LEADERSHIP

Versatile - Dependable and Productive

SAWS TO SATISFY YOUR EVERY NEED



Only Jenkins Has These Exclusive Features —

Standard machine for material 5" to 144" long. 4 rates of feed up to 56 FPM. up to 4" thick Any width you need

- PATENTED OILOMATIC FEED CHAINS AND TRACKS
- MAGNASCOPIC SETTING DEVICE • INSUROK LINED CHAINS
- POSITIVE FEED LUBRICATORS • QUICK-LIFT MECHANISM (OPTIONAL)
- AUTOMATIC HOPPER AND RETURN FEED (OPTIONAL)

JENKINS DIVISION OF

WRITE TODAY TO CURT G. JOA INC. SHEBOYGAN FALLS, WIS.

the economical application of fast setting resin adhesives.

A drip proof glue reservoir, especially designed for use with resinous adhesives and a feature of No. 22-D production models, is used to confine the glue where it is needed, achieving a remarkable degree of cleanliness and economy. The resilient gluing roll conforms to stock irregularities and spreads a properly controlled glue line. The doctor roll is heavily coated with hard chromium then polished to achieve a frictionless surface essential to glue line control.

A water cooled doctor roll is available as optional equipment, for use with glues which have an extremely short pot life at room temperature.

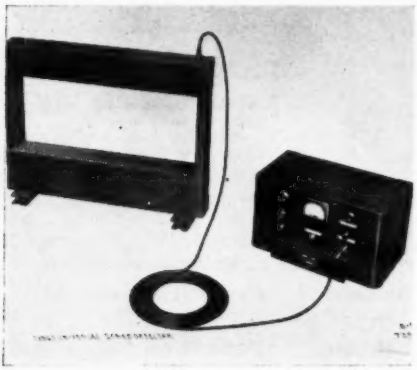
More detailed information is available from the Black Bros. Co., Inc., Mendota, Illinois.

METAL DETECTOR

Dings Electronics, Inc., 4740 W. Electric Ave., Milwaukee, Wisconsin, announces a new low cost metal detector.

The new Dings "Universal Series" metal detector is said to be sensitive to all magnetic metals, immediately and automatically signalling their presence, and thereby protecting machinery and product quality against tramp metal damage.

Extremely simple in design, installation and operation, the new Dings metal detector requires no attention. It is merely necessary to plug the unit into any single phase outlet, place the search coil around conveyor belt, and turn on the switch. Intensity can be adjusted to overlook non-magnetic belt lacings. The small compact control cabinet weighs but 24 lbs., and contains standard type tubes.



The company will be glad to answer inquiries as to adaptations needed for this equipment to make it usable for lumber, logs, etc.

PULPWOOD SCALOMETER

The new "Elkins Pulpwood Scalometer," designed to measure pulpwood accurately and quickly, was demonstrated by its inventor recently at the St. Regis Paper Company, Jacksonville, Florida.

The Scalometer looks something like an oversized camera, equipped with tripod and scales. The operator goes through a simple, three-step procedure.

He views the pulpwood load through the eyepiece; he adjusts the instrument's "scanning bars" to outline the load, and as the adjustments are made they are converted into a reading in square feet and cords on the scales above the eyepiece. The operator merely reads the total—and has the correct answer.

"I learned, by personal experience over the years, that the old hand-scaling method is inaccurate and costly," W. R.

Elkins, inventor, said. "You can take any two experienced hand scalers and get them to measure a load of pulpwood and they'll never come up with exactly the same answer."

Distribution of the machine will be handled by Minis & Co., Inc., of Savannah, Georgia.

STEEL RULE

A jointed stainless steel 2 ft. rule, which also serves as a protractor, has been introduced by the George Scherr Co., Inc. 200 Lafayette St., New York City. This new tool is one of the most practical and useful aids for mechanics and draftsmen to measure longitudinal as well as angular dimensions, avoiding time-wasting difficulty of counting fine graduations.

The jointed rule has an accurate scale of chords engraved on one side from 0 to 120 advancing by half degrees and it is also provided with two center dots, one on each blade, by which when using a pair of ordinary dividers, the rule can be set to any desired angle, or vice versa, any angle can be determined. The stainless rule has graduations reading in ⅛", 1/16", 1/32", and 1/64".

HARDWARE "MIRACLE" TRACK

The new "miracle" track for plywood doors has been introduced by the Progress Hardware Mfg. Co.

This new "miracle" track made of long lasting extruded material is rust proof, silent in operation, and simple to install. Just cut top and bottom track and install. It is advisable to use small wire brads-or-nails. This "miracle" track can be used for ¼" doors in showcases, cabinets, and vanitories. No shoes or rollers are needed.

For further details write Progress Hardware Mfg. Co., Inc., 211 Bowery, New York 2, New York.

SPACE
TIME
LABOR
SAVER

IRVINGTON #32 Angle Cutting
CUT DOWN CUT-OFF SAW

For All Types of Plants Where Fast Precision Cutting is Required

Swings on roller bearings. Right or left angle cuts to 45 degrees, 7" wide. Saw size: 10" diameter of table 16", motor ¾ H.P.

WRITE FOR DETAILS ON THESE IRVINGTON COST CUTTING UNITS TODAY

Irvington
MACHINE WORKS

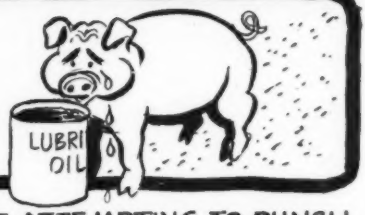
1808 N. E. 7th Ave.
Portland 12, Oregon

3 Colfax N. E.
Grand Rapids 5, Mich.

Mechanics Through The Ages

THE GUNS OF **CHICAGO'S** EARLY **FORT DEARBORN** SOLDIERS WERE REPAIRED—AND THEIR HORSES SHOED—BY A BLACKSMITH WHO CAME ALL THE WAY FROM **MILWAUKEE** TO PERFORM THESE SERVICES.

HOG FAT WAS USED TO LUBRICATE MACHINERY IN MANY MIDWEST BACKWOODS SAWMILLS DURING CIVIL WAR DAYS.



BEFORE ATTEMPTING TO PUNCH HOLES IN BRITTLE STEEL, EARLY 19th CENTURY **SCISSORSMITHS** OF ENGLAND, BURIED THE METAL IN **CELLARS** AND LET IT RUST FOR **SEVERAL WEEKS.**

Good News Gets Around...

Moak All-Purpose Saw Tables

TO CUT BOTH HEAVY MILL JOBS AND FINE SHOP WORK WITH UNERRING PRECISION

Capacity for cutting stock up to 5⅝" thick and accuracy for fine work are both available in this one machine—the Moak No. 16-A All Purpose Saw Table. Functionally designed throughout for efficient operation, Moak Tables raise, lower, or tilt at a turn of a hand wheel. Accurately graduated cut-off gauges adjust in V-slots machined in the polished semi-steel table; rip fence has rack and pinion adjustment. Choose from two models, three drives.

Get the facts **on Moak Saw Tables right away. Write for our colorful booklet.**

REBUILT AND USED MACHINES

BAND SAW
Tannewitz G 36" & Amer. B-36" B.B.
Tannewitz PH-30" & Oliver 30", D.M.D.

BORERS
Root G250 Foot-Feed Vertical single
Root G300 Heavy Duty Hyd., vert. single
Root GMC light-duty foot-feed vert. mult.
Greenlee No. 369 3-ft. vert. multiple, m.d.
Greenlee No. 369D 6-ft. vert. multiple, m.d.
Greenlee No. 386C 8-ft. vert. 16-sp. m.d.
Root D210 heavy-duty hyd. horiz. single
Root D200 4-ft. hyd. horizontal multiple

CARVERS
Porter and Gallmeyer & Livingston single sp.

CLAMP—CLAMP CARRIERS
Handy No. 50 drawer and cabinet clamp
Handy No. 444 two-way air clamp
Handy and Union revolving case clamps
Lancaster No. 1000 air chair clamp
Taylor 7½-ft. 40-sec. chain-type carrier

DOVETAILERS
Dodds 15-spindle, spiral gear

JOINTERS—GLUE JOINTERS
6, 8, 12, 16 and 20-in. hand jointers
Porter CM 16-in hand jointer, direct m.d.
Diehl No. 60 continuous feed glue jointer
Fay & Egan No. 429 continuous feed glue jointer

LATHES
Imperial automatic turning, direct, m.d.
Mattison No. 57-D automatic turning, m.d.

MORTISERS
Wysong & Miles No. 284, P.F., hollow-chisel
Wysong & Miles No. 288 5-sp. hollow-chisel
New Britain No. 2 chain saw mortiser, m.d.
Enterprise ball-brg. pulley mortiser, m.d.

MOULDERS
Mattison No. 229, 9-in. all-electric, 4-side
Y-A No. 26-A, 12-in. 4-side, motor driven

PLANERS
Hall & Brown No. 222, 18" single head, d.m.d.
Whitney & Yates 24" single head, motor drive

ROUTERS
Onsrud W-240 high speed electric

SANDERS
Smith No. 4C1, 42" 3-drum endless bed
Fay & Egan 48" 3-drum endless bed
Wysong & Miles No. 275 hand block belt sander
Wysong & Miles No. 291, 6-ft. panel sander
Wysong & Miles No. 294 automatic stroke sander
Wysong & Miles No. 289 oscillating edge belt
Wysong & Miles No. 309, 30" comb. Disc & Sp.
Root M207 48" sgle. disc sander, m.d.
Wysong & Miles No. 310, 36" double disc sander
Peerless 20" vertical belt sander, 5 HP

SAWS—CUT-OFF—SAW TABLES
Bell No. 216 cut-off saw, m.d.
Bell No. 12-B double miter & cut-off saw
Y-A No. 8 tilt-arbor, roller table, m.d.

SAWS—CHAIN-FEED—SELF-FEED
American No. 25 chain feed rip, d.m.d.
Mattison No. 207 chain feed rip, d.m.d.
Hermance No. 300-G self-feed, d.m.d.

SHAPERS
Porter No. 200 SVM & Whitney No. 89 sgle. spdl.
Whitney No. 134 and No. 150 dble. spdle., m.d.
Jones-Superior No. 105 dble. end serpentine

MISCELLANEOUS
Capital 65" veneer clipper
Hawker No. 1 dowel rod machine, m.d.
GRUPP 25" hyd.-feed lock-corner machine
Hermance No. 23 single end tenoner, m.d.

B. M. ROOT CO. **York, Pa.**

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Northfield 27" DMD Ball Brg. Bandsaw
Dodds 12-Spindle Dovetailer, mtr. dr.
Solemn SE3-M 48" Mtr. Dr. Endless Bed Sander
Vonnegut 6" Electric Ball Bearing Moulder
Hermance E-1—6"x4" B.B. Molder, Belt Dr.
Yates-American No. 35—9" Elec. Moulder
Yates-American C89—6" Electric Moulder
Greenlee No. 227-BM M.D. Auto. Mortiser
Whitney No. 32—30" Motor Drive Ball Bearing Single Cabinet Planer
Diehl No. 75 DMD S/L Ripsaw
Mattison No. 207 DMD S/L Ripsaw
Ekstrom-Carlson No. 327 Electric Router
Whitney No. 134 DMD B.B. Dbl. Sp. Sharp.
Whitney No. 295 DMD B.B. Auto. Shaper
Smith 42" Motor Dr. End. Bed Sander
Curtis No. 43-RI DMD Hydraulic Auto. Stroke Sander
Mattison No. 157 DMD Double Belt Stroke Sander, 8 ft.
Solemn SE7-4 49" DMD Endless Bed Sander
Peerless 14" Horiz. Belt Sander, mtr. dr.
Yates-American S300—61" DMD Roll Feed Sander
Whitney No. 24—30" M.D. B.B. Dbl. Pl.
Wilkin-Challoner B.B. M.D. Sash Sticker
Diehl No. 89 Tapeless Veneer Splicer

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1637 N. Lowell Ave. Chicago 39, Ill.
Phone SP 2-8680

HYDRAULIC STANDARDS

A new revised up-to-date issue of the "J.I.C. Hydraulic Standards for Industrial Equipment" is now available from Miller Fluid Power Company, 2040 N. Hawthorne Ave., Melrose Park, Ill., manufacturer of power cylinders, boosters and accumulators.

The new issue presents the "Standards" in complete, unabridged form. Also included are recommended practices on hydraulic packings and seals, examples of packing code identification, sample circuit using J.I.C. symbols, glossary of terms and other useful information.

Small boy: Did you lose a dollar bill, mister?

Passer-by: Why-er-yes, I did. Have you found it?

Small boy: Nope I just wanted to check up on how many were lost this morning. Yours makes ninety-six.

buyers' service

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If you will list below the wood-working machines, supplies or machine shop equipment in which you are interested and mail this page to us, we shall be glad to refer your needs to the manufacturers or others in position to serve you. Replies will come from them — not from us.

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Lists of Used and Rebuilt Machinery, either For Sale, Wanted, or For Exchange, set in uniform style, will be published in the Classified Section at the rate of $7.50 for name and address and a five line advertisement. For additional lines, only 75c per line.

DISPLAY ADVERTISEMENTS: 1 inch (Minimum), $8.50; 2 inches, $17.00; 3 inches (Maximum), $25.00.

Write directly to those offering the machine for sale, for prices and full descriptions. If what you seek is not advertised, write Hitchcock Publishing Company, 222 E. Willow Ave., Wheaton, Ill., making known your wants on either new or used machinery and the publisher will gladly assist you.

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Air Compressors, various sizes
Band Saw, Greenlee No. 410, 36" bb, dmd
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Band Saw, F&E No. 50—36" bb v-belt & motor
Blowers Garden City 55"
Borer, Andrews 3 spdle. vert. bed
Borer, Greenlee 369-4 ft. m.d.
Borers, Greenlee No. 370 6 ft. horiz. dmd
Borers, Moak SS 2 Spindle horiz. dmd
Borer, W&M 283-B, bb, dmd, sgl. spdle.
Boring & Sawing, McKnight 26F dmd
Carvers, Yates-American single spindle bb-dmd
Clamps, Handy No. 71 revolving
Clippers, Coe 88" bd. and motor
Dovetailers, Dodds, 20 spindle
Frequency changers, 30 KW dmd
Glue Jointer, Diehl No. 66 bb.-dmd
Glue Jointer, Jenkins No. 343A bb-dmd
Glue Spreaders, Francis 12" dmd
Jointers Glue, Yates-American No. 213 bb-dmd
Jointers, New Moak 12" bb-dmd
Jointers, Porter 16" and 24" bb-dmd
Kiln Trucks, 4' & 6', roller bearing
Lathe, Yates No. 74 bb-dmd
Mortiser, Sidney, single-spindle pb. bd.
Mortiser, Greenlee No. 228 vertical bd. & motor
Mortiser, New Britain No. 7 bd. & motor
Mortiser, W&M No. 238—5 spindle Horiz. dmd.
Moulders, Mattison No. 22, 6" bb-dmd
Moulders, Yates-American C88, 8" bb dmd
Moulders Yates-American C-89—6" bb-dmd
Planers, Oliver No. 169, 30", dbl. bb, dmd
Planer, Facing, Yates-American 36" with Jackson & Church feeder on base, bb-dmd
Planers, F&E—30" double, pb. bd. & motors
Planers, Berlin 36" round head dmd
Planers, New Crescent 24" bb-dmd
Planer, F&E No. 156 36x7 dmd. round head
Planer-Matcher, Yates A1-15"x6" round heads pb. bd.
Redrier, Merritt 12 plate 36x72
Routers, Defiance single spindle high speed dmd
Sander, Yates No. 430, semi-stroke, bb, dmd.
Sander, Yates No. 431—43" 3 drum endless dmd
Sander, Solem 2 drum endless 36" bd.
Sanders, Niagara brush, bb-dmd
Sander, 48" double disc, dmd
Sander, Smith 49" 3-drum endless bed, bd.
Sanders, F&E 60" 3-drum roll feed, dmd
Sanders, McKnight single drum 24"x16" dmd
Sanders, Porter Cable vertical oscillating dmd sgl. spdl.
Sander, W&M No. 171 belt bb., m.d.
Saws, F&E No. 500 variety bb-dmd
Saws, Greenlee No. 493, variety, bb, dmd
Saws, Hermance Gang Rip, pb. & motor
Double Cut Off Saw, Jenkins 105-A 60x96 with copes, bb, dmd
Saws, New Delta-Crescent 12" tilting arbor dmd
Saws, New Multiplex 40A & 50A
Shaper, Defiance double spindle, bb-dmd
Shaper, Whitney No. 389, double bb-dmd
Shapers, New Moak single spindle bb-dmd
Shapers, Greenlee No. 180 double bb-dmd
Shaper, Whitney double spindle, bb., md.
Sticker, American No. 1, 1 side 4" pb. bed
Taping Machines, Dennis No. 2
Tenoners Yates-American No. 55 sgl. end, bb-dmd
Tenon Heads, single and double end
Tenoner, Hayes 6 ft. dbl. with copes, pb. bd. & motor
Veneer Press, Francis 84x48

Many other items, send your inquiries

HOLLOW CHISEL SHARPENING TOOL No. 830

For use in hand brace, made of High Speed Steel. Chisel is placed in vise and a few revolutions of tool fastened in hand brace produces sharp cutting edge. Burr is then scraped or filed off and corners are finished by hand with small square file.

WOODWORKERS' TOOL WORKS 222 SOUTH JEFFERSON STREET CHICAGO 6, ILL.

FOR SALE

Woodward Machinery Company
309 E. Second St. Cincinnati 2, Ohio

Band Saw, Parks 22" M.D. $85.
Belt Sander, Mattison No. 131, hand block, $185
Blowers, New 20 in., BB., $55
Borer, Bell dbl. end, $300
Borer, F&E vertical gang, 12 spdle., MD., $450
Clamp, Handy No. 50 Drawer and Case, $125
Clamp, Handy, 7½ ft. revolve glue, $300
Dowel Mach., Bell No. 4, power feed, $250
Glue Spreader; Francis 8 in., MD., $35
Jointer, New 6 in. Bench, $45
Mortiser & Borer, American horiz. 5 hp, HC MD, $300
Planer, Egan 24x6 Pony, $250
Radial saws, Dewalt 2 to 5 HP, sgl. and 3 ph., $185 up
Ripsaw, Crescent, Fast, light, self feed, MD, $300
Router, Ekstrom No. 327, BB, $600
Sander, Light, edge belt, MD., $175
Sander, Nash dowel and handle, $300
Saw, Roll table cutoff, $75
Shapers, BB, MD, Single small, $75 to $125
Sticker, Smith 6 in. 4 side, $175
Swing Saw, Towsley DMD BB, $150
Tenoner, American No. 2-1-2 sgl. cope and Mtr., $250
Variety saw, heavy duty, with jointer, MD., $175

L. R. Kenner
3825 Trinity Road Louisville 6, Ky.

Borer, 48" Bell No. 205 horiz. multiple head
Clamp, 60" Union revolving case, air operated
Cutter Grinder, Mattison No. 231 motor drive
Dowel Cut-off and Pointer, Bell No. 3, 99% New
Planer, 30" Whitney sgl. sq. head, with motor
Router, Ekstrom-Carlson No. 232, 5 h.p. motor
Sander, 48" Smith No. 404 end. bed, BB, M.D.
Sander, 49" Yates No. 431 end. bed, BB, M.D.
Sander, 6' Wysong & Miles No. 291 hand stroke
Cut-off Saw, Diehl No. 88 Str. Line

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Saw Dust and Shavings Mill Exhausters and Blowers—Hundreds in stock, sizes to suit any need. Also Air Compressors, Fans, Rotary Blowers, Money Savers—Send specifications.
All machines rebuilt and fully guaranteed.

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Black Bros. 22D, 26" Dbl. Glue Spreaders
Black Brothers PC1 Portable Glue Mixer
Falls Straight Line Rip Saw
Yates American C88 Moulder, 8"
Vonnegut 6" Moulder

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719 North Hills Drive St. Louis 21, Mo.
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DOUBLE END TENONER
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FURNITURE PRODUCTION
AT HOME . SPARE TIME!

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KILN DRIED CABINET WOODS
Any quantity up to car-load lots. Immediate delivery or pick-up. Walnut, Cherry, Red and White Oak, Mahogany, Northern Birch, White Ash, Hard Maple, Poplar, Basswood, Prima Vera, Idaho White Pine, Red Gum, Cypress.

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439 Grant Line Road New Albany, Ind.

IMMEDIATE DELIVERY
New Tannewitz Type U M.D. Tilting Arbor Saw
New Delta 3 H.P. 3 phase Radial Saws
New Delta 2 H.P. single phase Radial Saws
New 20" Delta ball bearing Band Saw
New 36" Delta ball bearing Band Saw D.M.D.
New Unisaws single and three phase
New Parks 12" Planer
New Milbury Bench Tenoner D.M.D.

AAA SAW & TOOL SERVICE & SUPPLY CO.
1401 W. Washington Blvd. Chicago 7, Ill.

FOR SALE
2—Curtis Rubbing Machines, model No. 48, table 78"x36", two rubbing blocks, motor direct connected. Used approximately 3 months. Reason for selling, ceased manufacture of television cabinets.

NORQUIST PRODUCTS, INC.
Jamestown, N.Y.

Motor Driven

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Sizes: 10 to 60 KW
Outputs: 50-100-120 and 180 cycle
Reliably Rebuilt
1 YEAR GUARANTEE
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SAVE MONEY when you BUY any ELECTRICAL EQUIPMENT
We actually have one of AMERICA'S LARGEST STOCKS

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2 Food Machinery—Open Back—12 Tr. 2 Row—L-Shape—Cltng. M.D. @ $950
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Greenlee Surfacer, 15 H.P. 6 roll, complete with grinder, power lift on tables. 30x8".
Variety Saws, Tann., Oliver, Amer.
Band Saws, 30", 36" Oliver, Tann.
Shapers, Single, Double, Automatic.

MANY MORE, ALL LATE, GUARANTEED

CENTURY MACHINERY CO.

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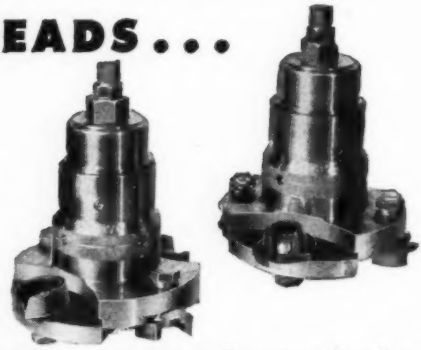
ABOUT THOSE REPAIR PARTS AND CUTTERS FOR SHIMER CUTTERHEADS . . .



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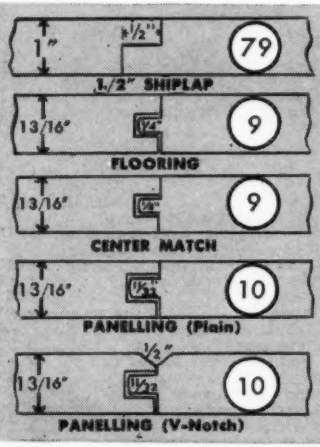
Due to practical considerations, it was found necessary to limit the number of circular type bits which will be supplied for the Circular Bit Type Cutterheads—the type for which Shimer was particularly noted. We regret that bits for other patterns than those shown below cannot be made in small quantities at reasonable cost. By mass-producing the circular bits for the patterns shown, these cutters will be available at $4.75 each. Shimer Circular Bit Heads were made with both flat seats and cone seats.



Bits for only one pattern are available for Flat-Seat Type Heads—½" Shiplap or Shimer Pattern No. 79 as shown. (Very few Flat-Seat Type Heads were made in recent years.)

For the Cone-Seat Heads, we have in stock, bits for Shimer Patterns No. 9–Flooring, No. 9–Center Match, No. 10–Panelling, and No. 10–V-notch Panelling. These bits are available in each of the five diameters required to fit any Shimer Cone-Seat Head. As the cutterhead pockets vary from 1¾" to 2¼", it is necessary that we have the serial numbers on your heads to be certain of supplying the proper diameter cutters.

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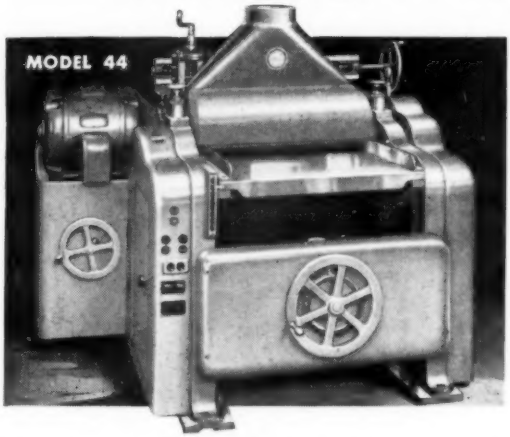

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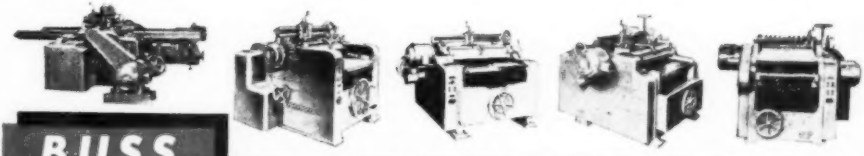
***MODEL 44 CAPACITIES:** 26, 30, 36, 40, 42, 50, and 52 inches x 8 inches.

***MODEL 66 CAPACITIES:** 30, 36, 40, 42, 50, and 52 inches x 8 inches.

THERE'S A BUSS PLANER TO EXACTLY SUIT YOUR NEEDS



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14" saw cuts 4" lumber
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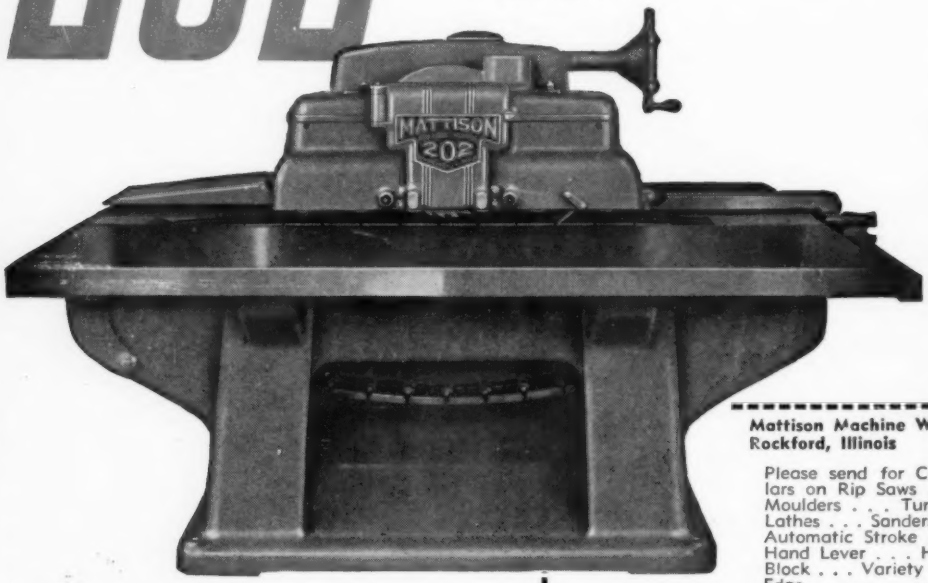

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